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ABSTRACT

This volume presents an extensive review of the literature relating to collection development in tertiary institution libraries, a bibliography, and appendices for the main report of "Measures of Adequacy for Library Collections in Australian Colleges of Advanced Education" (IR 004 761). The literature review includes sections on principles of collection development, quality and quantity of provision of materials, provision and availability of materials, cost, and methodology. The bibliography lists 26 bibliographic sources, 88 Australian studies, and 560 other studies relating to collection development. Statistical data, survey and test instruments, definitions, bibliographical aids in collection development, and an outline of quantitative standards suggested for college library collections are included in the appendices. (KP)

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MEASURES OF ADEQUACY FOR LIBRARY COLLECTIONS IN AUSTRALIAN COLLEGES OF ADVANCED EDUCATION

REPORT OF A RESEARCH PROJECT
CONDUCTED ON BEHALF OF THE COMMISSION
ON ADVANCED EDUCATION

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VOLUME 2

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LITERATURE REVIEW
BIBLIOGRAPHY
APPENDICES

PERTH
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OCTOBER 1976

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I. REVIEW AND ANALYSIS OF THE LITERATURE

1. INTRODUCTION

An extensive review of the literature relating to the operation of tertiary institution libraries was conducted with six basic aims:-

(1) To examine the principles on which tertiary institution libraries base the development of their collections, and to determine whether, and how far, the purposes of libraries in Colleges of Advanced Education relate to these principles.

(2) To examine any external factors which have previously been considered as having an effect on the adequacy of a tertiary library collection, irrespective of the individual circumstances of a particular library.

(3) To examine the administrative procedures operating in tertiary institution libraries, which may have an effect on either the quantity or quality of the collection made available to members of the institution.

(4) To examine any previous attempts to suggest partial or complete measures of adequacy for tertiary libraries in Australia, with a view of building on the findings of any work considered valid.

(5) To examine measures of adequacy proposed for tertiary library collections elsewhere in the world, and determine the extent to which such measures are relevant to Colleges of Advanced Education.

(6) To examine the methodologies employed by previous researchers both in Australia and overseas, in investigating the problems of collection adequacy in all types of library, with a view to adopting suitable techniques to empirical studies in Colleges of Advanced Education.

2. PRINCIPLES OF COLLECTION DEVELOPMENT IN TERTIARY INSTITUTION LIBRARIES

Although perhaps a unique combination of very diverse institutions in a group nominally serving the same educational purposes, Australian Colleges of Advanced Education have similar counterparts in many countries overseas. Teachers colleges are a common type of higher educational institution, while multi-discipline colleges and institutes of higher technological education are also to be found widely throughout Europe and North America. The educational objectives of institutions of a similar type are much the same in all countries, as are the purposes served by the libraries of those instituions. It is not surprising, then, that the literature relating to the purposes of a library collection in higher educational institutions should have a considerable measure of agreement.

As regards material to be acquired by the library, there is general agreement (e.g. 20, 300, 464, 590, 655)* that this should include:-

(a) The material required by students, at all levels, in order to achieve an adequate education in their courses of study. This would include course textbooks (although not necessarily in sufficient duplication to meet all student requirements in cases where students are recommended to purchase copies), recommended reading list material, and also a range of material relevant to a course, sufficient in breadth and depth to allow a student to pursue a programme of independent study within the course objectives.

(b) The material required by lecturers to be able to teach in an effective manner, and remain conversant with new developments in knowledge in their area of teaching. This would include periodicals, conference proceedings, and monographs (particularly of the review type), which update subject expertise, and material relevant to the aims, methods and issues of higher education.

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*Note: References in this review are made to items in the general bibliography of the report, in the form (17:217), which refers to page 217 of item number 17 in the bibliography. Page numbers are not given where various parts of a work are all relevant.

(c) The materials required by research workers, both students and faculty, for the effective support of their research programmes. This may include a large variety of types of material, closely dependent on the specific needs of individual research programmes, e.g. technical reports, or manuscripts, or survey data, as well as including a broad range of periodical titles, and, to a lesser extent, monographs.

(d) Materials which give members of the institution access to the major ideas and developments of civilisation, and promote an individual's intellectual, social and cultural development. This is generally taken to include a range of material on current affairs, creative literature and the liberal arts, items allowing the individual to relate to his social and cultural heritage, and, possibly, some items with a mainly recreational function.

These four purposes relate to the physical adequacy of the collection. As Chapin (225:54) has pointed out, there is also the necessity of ensuring bibliographic adequacy, and there is also general agreement on the provision of:-

(e) Works which allow members of the institution to obtain the materials referred to in paragraphs (a)-(d) above, and find information in those materials, as quickly and simply as possible. These include bibliographies, both serial and monograph, indexes, abstracting services, and other literature and reference guides.

Less often mentioned are the requirements that the collection should provide:-

(f) Materials required by college or university administrators for the effective administration of the institution. This is usually taken to include items on higher education in general (including relevant government documents), educational administration, personnel and financial management, and the archives of the institution.

(g) Materials relevant to the needs of the community in which the institution is situated, including the needs of both individuals and organizations.

Student Course Requirements

There is little controversy over the need to meet student course requirements. However, there is general recognition that even this most basic of college library tasks may present problems in practice. Recurrent difficulties appear to be lack of knowledge on the part of the library about the requirements that any particular course is likely to generate and that new course developments are established without reference to existing library resources and with insufficient lead time for the library to acquire the necessary resources. To quote Govan:

> "It remains an abiding puzzle that faculties highly sensitive to the need for library resources so frequently make educational decisions with no regard to the library's ability to adapt to them." (325:546)

One major area of disagreement (672) is over the extent to which the library should meet the demand for course textbooks which students are recommended to purchase. As McGrath has pointed out (480:357), there are basically two theories of library provision - the 'critical' theory, in which the library attempts to acquire the best published material available in each subject relevant to a college's interests; and the 'demand' theory, in which the library simply meets the demands of readers. The Swarthmore College Special Committee on Library Policy has distinguished (655:337) the results of the two theories as the difference between the library being a library-college, in which students are able to browse through a wide range of titles pursuing independent programmes of study; and being a warehouse, which simply provides titles requested, usually on the recommendation of lecturers. Faced with heavy textbook demands, because of financial restraints, most libraries have compromised with some form of limited duplication and access, either via a short-loan collection or by providing copies whose use is confined to the library. Nevertheless, there are many academic librarians with

strong views on the extent to which duplication is or is not desirable, either for course textbooks or recommended reading in general.

The extent of provision for independent study programmes has also caused some comment. Bryan and Hean (20:34) have argued strongly that C.A.E. libraries should have collections allowing access to the information needed for independent study purposes, and Hean (39:205) has suggested that, this being the case, the C.A.E. library should have a collection somewhere between that of the traditional college and that of a university. The University of London's Committee on Library Resources stated the case well in saying:-

> 'It is not enough to ensure that the undergraduate has access to prescribed and recommended books. He must be 'exposed' to his subject, able to grasp its breadth and its depth, and able to browse at leisure among the library shelves.' (692:23)

One of the problems of meeting the requirements of independent study programmes, and research, in advance, as Noel (57:18) has pointed out, is that of the library anticipating demands when the specific topic of study in any year may be chosen within a wide subject range. It is this very difficulty which has led university libraries, particularly those in the United States, to the development of collections containing millions of volumes in the hope of thereby meeting any foreseeable demand. Changes in teaching method have led to a development of the research method, to a varying degree, at all levels of higher education (92:154,703), and it has become increasingly difficult to differentiate between 'independent study programmes' involving undergraduates and the 'research projects' conducted by Master's or even Doctoral degree students, as regards the range of materials required. The place of 'research' in C.A.E.'s has been clearly stated in the reports of the Commission (8:114, 24:25), but there is evidence that college libraries are increasingly faced with demands from undergraduate students that might well have been considered the province only of research students and staff in the recent past. Both Barnes (12:2) and Spyers-Duran (641) have suggested that these demands are due at least in part to the rising expectations of a generation

of students brought up to the methods of independent study and the use of some excellent libraries, at school level. The conclusion is that the nature of the required college library collection is changing, as it must do, in response to the changing demands of students, resulting from the developments in teaching and learning methods.

Teaching Requirements

There have been very few studies of the detailed library requirements of college staff for teaching purposes. The general assumption seems to have been that these are basically a combination of the requirements of students and of research workers. However, the work of the American Psychological Association (97) and the INFROSS researchers (445) has indicated that this is only partially true, and that teachers, for instance, make much heavier use than other groups of news journals, review journals, books of readings (i.e. reprinted journal articles or sections of books) - works that synthesize the results of research rather than report research findings in their primary form. Certainly, college teaching staff require a greater depth of material than the students whom they are guiding, since one of the roles of teaching in higher education, particularly beyond the first year level, is in interpreting to students recent developments in a subject field. However, there is some doubt of the extent to which this requirement necessitates widespread access to the primary research data in journal articles and technical reports, as would be required by staff engaged in research.

Research Requirements and Rationalisation

As regards research requirements, both for academic staff and postgraduate students, the main argument is over whether and to what extent colleges, as distinct from universities, should engage in research. Such an argument has been pursued in liberal-arts colleges in the United States, and polytechnics in the United Kingdom, without any clear realisation of the problem. The attitude of the Commission towards staff and student research is clear, as laid down in its Third Report, which recommends only:-

'1. Research on projects the majority of which would be concerned with practical problems; preferably related to problems within industry and to urgent social and economic questions within the community.

2. Research which would encompass training in investigational and research techniques as a part of the courses designed to provide higher degrees by formal study.

3. Research by members of staff to acquire qualifications of a postgraduate kind either within or out of the college and likely to lead to a higher degree either of a college or university.

4. Individual research either pure or applied, or a combination of both, stemming from individual interest and a strongly felt need for intellectual inquiry.

5. Research by individuals or groups supported by the Australian Research Grants Committee or other research fund organisations.

6. Research sponsored by agreement between industry and a college directed to specific ends.

7. Educational research supported by Australian Commission on Advanced Education funds.' (8:114).

Where research within these guidelines is carried out, it will be the obligation of the library to provide the materials required for effective research. This requirement should not be underestimated - the production of this report above, for example, involved the Western Australian Institute of Technology library in obtaining over 300 items from outside its own collection, in spite of the fact that the library already contained a collection in the field of library studies probably as large as that held by any other C.A.E. It is pertinent to record at this point that the necessary cost of library provision per research student

has been variously estimated at between 4.8 (152:298) and 8 times (213) that of an undergraduate student. Given the extent of the demand that may arise from research requirements, college librarians have concluded that it is essential for colleges to define closely the subject areas in which research collections will be established, and that if sponsored research programmes are accepted, the funding of such programmes should contain an adequate component for the purchase of associated library materials.

The literature on rationalisation of collections becomes relevant at this point. There has been a good deal of discussion (167,577) regarding the rationalisation of university library collections in recent years, arising largely from the realisation, following financial reductions in North American universities in the late 1960's and early 1970's, that not even the greatest and most heavily funded university libraries could hope to be self-sufficient in their provision of research material. Pleas for rationalisation, resource-sharing, and recognition of the inter-dependency of academic libraries became commonplace. It soon became clear that the problem was not one of rationalisation of library collections, but the rationalisation of university research programmes (157). The academic library is a service agency, and as long as research programmes are carried on within the institution it serves, it must endeavour to meet the requirements arising from that research.

Nevertheless, it was recognised (185:15, 577:452) that, for research purposes at least, local ownership of an item did not necessarily result in faster supply than obtaining the item from elsewhere, if there was another source accessible nearby, or an inter-library loan service geared to rapid supply of material on request. Experience in the United Kingdom since the foundation of the British Lending Library suggests that a number of university libraries have been able to curtail increases in the number of periodical subscriptions because of their knowledge of their ability to obtain a very high proportion of wanted periodical items within 48 hours, from a central source. Similarly, several co-operative periodical supply sources exist in the United States. These are almost entirely concerned with

research-level and little-used periodicals. However, the Associated Colleges of the Mid-West periodical bank serves a group of liberal-arts colleges, and its experience (645,646) may be of more relevance to the C.A.E. situation. Differences in teaching programmes in the various colleges were found to limit the extent to which cooperative provision could be successful at the undergraduate level (323). As the Australian Union of Students submission to the Commission in 1971 pointed out:-

> 'There may be a case for greater cooperation, regionalisation, and specialisation, but not until each college has met minimum standards for its projected maximum student size' (10:36)

Given also the often-reiterated importance of having a sufficiently wide range of materials to enable students to browse effectively (100,349), it seems that there is limited scope for co-operative collection building at the undergraduate level, although there may be substantial rationalisation at the research level, particularly if there is some rationalisation of research programmes, either on a local, state or national level. A high degree of self-sufficiency remains a desirable goal for the undergraduate library.

General Reading Requirements

The need to provide materials to promote general intellectual and cultural development is widely stated in the literature (e.g. Bryan and Hean (20:34)), but there is virtually no discussion of the exact function that these materials perform, nor of the extent to which they are additive to, or included within, those required for other college purposes. Although these materials largely make up the 'core collection' which is often the base of quantitative standards (see pages 33-34) there is a surprising lack of definition of the concept - which is reflected in the widely varying quantitative recommendations on the size of a library's desirable 'core' (see Appendix 1). Clearly, such materials must range, at least at an introductory level, into all the broad areas of man's knowledge and cultural heritage, but there are considerable difficulties in translating such a generalisation into exact statements regarding which

materials should be acquired, and these difficulties do not appear to have been faced in the literature. For this provision, the college library would appear to be acting to a large extent in a role not dissimilar to that of a public library, and some publications relating to public library selection principles appear relevant (e.g. 468).

College Administration Requirements

There seems to be no relevant literature relating to the provision for needs of college or university administrators, possibly because of their relatively small requirements in relation to total library provision, and the fact that much of the material needed would also be required by both teachers and students, arising from their interests in the development of tertiary education.

Community Requirements

As regards materials for possible service to the community, once again the literature is sparse. Although several Australian reports, including those of the Commission's predecessors (28:41, 29:64) refer to the possiblity of C.A.E. libraries, particularly those situated outside capital cities, serving as regional resources for both local industry and the wider community, these reports contain very little discussion of what such a development would mean in terms of collection requirements. The recent Regional Colleges report recognised (5) that a community role might required additional funding for college libraries, through a variety of funding bodies, but made no recommendations as to materials required. A clear distinction must be made between a college acquiring materials for the community and the situation in which a college library provides a 'community service' whereby it allows members of the general community access to its collection, or provides information services based on the resources it has built up to serve the members of the institution. Many colleges and universities, both in Australia and overseas, provide this community access, based on reading privileges, with limited or full borrowing rights. But no academic library in Australia, to our knowledge, is actually acquiring materials for

general community use only, over and above the requirements of the members of the institution it serves. Such acquisition implies an extra funding that institutions have not been prepared to accept, and it is clear that at present the general concept of community services by tertiary institution libraries in Australia is limited to the provision of access to collections plus a limited staffing commitment, and does not include the acquisition of materials solely for the use of the general community. The recent report to the Commission by Brown and Sharman (15), on community library services in Whyalla, envisages the future community service to be provided by the C.A.E. library there by extended co-operation with other libraries in the area, rather than by the acquisition of a greater range of materials by the C.A.E. library to serve as a "Community Library". As regards collection development, any extra community commitment by the C.A.E. library is seen in terms of reference and bibliographic materials, and materials for teachers in the area undertaking external courses of other institutions. The report clearly states that extra funding would be needed to meet this provision, amongst other service developments.

It has been impossible within the confines of this report to fully investigate the problem of what collection 'adequacy' might mean in relation to a situation whereby a C.A.E. library served both as a college and a public library in the fullest sense. Since the likelihood of such a development seems small in the medium term, except perhaps in a few special circumstances, and since the possibilities have been researched recently by other investigators (15), we do not propose to consider this situation in any detail. Community access is considered here only as a problem of increased numbers of readers to be served from an existing collection, rather than that of public demands for a range of titles beyond that adequate to serve members of the college.

Stability of Collection Size

There has been some spirited discussion recently (291, 320,425,742) regarding the concept of 'no-growth' libraries in colleges and even in universities. This discussion has been

fomented by the very recently released report of a working party of the British University Grants Committee (690), which for the first time sets out as official policy the concept of what it refers to as the 'self-renewing' university library. The policy, which has already been heavily criticised (689) and is currently under discussion by the Committee of Australian University Librarians (C.A.U.L.), postulates that British University Libraries should receive new building space only so as to force libraries to withdraw material from their collections at a rate approximately equal to their annual total of accessions ten years previously (690:10). Such a policy might indeed result in 'no-growth' in a stable, established university.

The fact that an official funding body has seriously formulated such a policy for university libraries with a considerable commitment to the support of research means that the concept of 'no-growth' libraries in the C.A.E. situation at least merits serious discussion, once C.A.E.'s have passed their explosive growth period.

This 'no-growth' suggestion underlay much of the development of undergraduate libraries in universities, where the implication was that a library of fixed size, usually in the region of 100,000 volumes (425:5), and with a steady rate of new input of titles and discarding of unused works, could adequately cope with the great majority of demands of undergraduate students. Braden's detailed study of the development of undergraduate libraries in the United States (168) has shown that all such libraries have grown in size since their establishment, in spite of some considerable attempts to weed out unused material to 'research' libraries. In the C.A.E. context, at least in the medium-term, such a concept seems of dubious validity. Although a few of the metropolitan colleges may well reach their terminal size during the next one or two triennia, it seems unlikely that even at that stage, changes in the composition of the college membership will not continue to occur. Variations in the proportion of part-time or external students may be expected to continue, while development of courses to meet changes in community demands or advances in knowledge may be expected to occur, and desirably so, into the indefinite

future. Thus, whilst it may well be true that once colleges have reached, at least approximately, a stable state, the rate of growth of collections may decline, this may be seen merely as an extension of present trends. These appear to portend a slowing down of the development of new courses in C.A.E.'s. Hence we may expect a corresponding slackening in the rate of growth of their library collections, since much of the rapid recent increase in the size of college collections has been in order to provide a service for new course areas. In a 'steady state' situation, collection increases arise largely as a result of the need to acquire new publications, both monograph and serial, which advance knowledge in the subject fields of interest to the college. We have assumed that in practice a wholely 'steady-state' situation is not likely to arise in Colleges of Advanced Education in the medium-term.

3. QUALITY AND QUANTITY OF PROVISION

Although there is a considerable measure of agreement over what kinds of materials are to be acquired by college libraries, the heart of the problem of devising measures of adequacy is met in trying to translate these generalizations into decisions, either on the quantities of material that should be acquired, or on the selection of individual items of adequate quality to meet user requirements.

Quality

The problem of the quality of a library's collection is widely discussed in the literature, but few conclusions have been reached, except general agreement that quality is an extremely difficult parameter to evaluate. Not only is the quality of an individual item capable of a variety of subjective assessments, but as Shabowich has pointed out (610), there is also the basic problem of assessing quality in the aggregate. The standards of the Association of College and Research Libraries in the United States state bluntly:-

> 'Quality and quantity are separable only in theory; it is possible to have quantity without quality; it is not possible to have quality

> without quantity defined in relation to the purposes of the institution' (114:290).

Barnes has also hypothesized (12:53) that the quality of a collection is some function of its quantity. However, there is considerable disagreement over the usefulness of even attempting to measure the adequacy of a collection in quantitative terms. Jones indicated the general dangers of quantitative approaches in observing:-

> '... quantitative management techniques and their supporting technology are essential for the continual development of librarianship. What is feared is that they may create a mentality (sciencism) which is reductionist, conservative, restrictive and techniques orientated, and which may stultify a different ... kind of mentality which is held to be more relevant to the central concerns of librarianship' (390:160).

There is indeed a danger that any quantitative approach may concentrate on those aspects of a library's collection and its use which may be measured easily, at the expense of other aspects which are equally or even more important, yet less easily measured. Nevertheless, to state, as does Lyle, that:-

> 'To judge a collection superior or inferior on the basis of the volumes holdings is as absurd as rating a college on the basis of its enrollment' (464:399)

seems an extreme view. It appears to us that part of the disagreement may be due to a misunderstanding of the relationship between the quality and quantity of a collection. The quality of a collection may indeed only be measured in relation to the individual needs and nature of the institution which it serves. It is likely to be closely linked to the care with which individual items are selected for the library, to meet current and future needs of the college. Nevertheless, the ability to provide carefully-chosen individual items partially depends on the wherewithal with which to purchase those items,

i.e. there must have been a minimum quantitative level of provision, if needed items of quality are to be available later, when readers translate their needs into demands upon the collection.

Quality and Collection Usage

This ability also depends on the relative success of the selection process in identifying those items which are indeed most likely to be of value to the readers served by the library. Such a statement links the quality of a collection with the value placed upon it by readers. (This may sound reasonable but there is no necessary logical connection, particularly if by 'readers' we simply mean the current members of the institution served. It is well to remember that many discoveries of importance to mankind have only been recognised as such many years later). If there is a close connection generally between the quality of a collection and the value placed upon it, the next step is to determine if and how this value may be measured.

As stated earlier, the very notion of quality has a subjective element. However, the college library user, in using an item, is either expressing his own subjective judgement that the book is of sufficient quality to read in relation to his needs, or else is reflecting some other person's similar judgement, in the case where the student uses an item recommended by a member of teaching staff, or any other college member. This is not to say that the user may not be in error. He may overlook a work others consider of great value because he is unable to recognise or comprehend it as such. Similarly, he may use a work that others consider poor or of little value. The value of the work selected by a percipient member of the library or college staff may be realised only belatedly. However, it is not unreasonable to assume that items of greater quality in relation to the needs of the institution will tend to be those that readers will use more often.

Such a relation is implicit in the many studies that have been made of the use of library materials by readers. The aim of many such studies has been to identify which kinds of materials are used, in order to make greater provision in cases

where the supply of particular items or kinds of item is found to be inadequate. To take this procedure to its logical conclusion, as Wessel does (721:45), and suggest that items obtained by the library should be selected in order of their marginal utility, seems to us dangerous, particularly if that utility is determined simply by the likely total use of each item. As Lohmann has suggested (455), different kinds of material may have intrinsically variable levels of use. (To give a simple example, items vary greatly in length, and this may affect the use made of them.) There are also the considerable problems (see pages 46 - 48) of defining what is meant by 'use', whether all use is to be considered of equal value, and how use is to be measured.

Nevertheless, after reading a considerable body of literature relating to the problem of quality our conclusion is that there is a link between the quality of a collection and the use that is made of it, and that for an undergraduate college, library quality must be considered more in relation to the current and near-future purposes of the institution, than in a library which has a major role in preservation of ideas and knowledge for future evaluation and re-evaluation. Quality is to be assessed within the context of an individual institution and is not something on which general recommendations may apply to all institutions, although techniques which allow a higher quality of collection to be achieved may well be applicable in all institutions.

Improving Collection Quality

If this is the case, some of the results of use studies are likely to provide data which may be of help in suggesting methods of improving the quality of a collection. Evans' recent studies (284,285) have suggested that materials selected by those with the closest relationship with the widest range of students and staff of an institution are likely to be more used than those selected by others, and that in most cases the 'best' selectors (in the sense of those who select the most used items) tend to be library staff who have some direct reader service role. This may have implications in those

colleges where library staff have virtually no role in the selection of materials. If it is indeed the case that the process of selection affects the utilisation of materials, it is likely to affect the level of future demands on the collection. For as Hamburg (339:113) and Buckland (188:130) have indicated, satisfied users are more likely to return and make future demands on the library. This in turn may require a higher level of provision to give the same standard of service.

Although there are a substantial number of books and journal articles relating to the selection of materials for tertiary libraries, the majority of such works concern themselves with broad principles of selection, the bibliography of selection, or methods of acquisition. Very little detailed examination has been made of practical arrangements which might ensure that the overall quality of a collection acquired is as high as possible. Undoubtedly, the difficulties of defining and evaluating collection quality are a contributory factor to the paucity of information on the subject.

However, quite apart from the results of Evans' studies referred to above, the general texts on academic library administration agree (e.g. 32,590,731) that collection development proceeds most satisfactorily when there is a considerable degree of co-operation in materials selection between teaching staff and library staff involved in collection development. The ideal is seen to be a situation where:-

(a) All teaching staff have an active interest in library collection development within their subject fields, and have a clear idea of overall development policies. This interest is encouraged by library staff by drawing the attention of teaching staff to new publications, and asking for assistance with retrospective purchases.

(b) There are library staff involved in the college's activities, with a detailed knowledge of current and future teaching and research developments through their liason with teaching departments, both informally and through the committee structure. Similarly, teaching staff and students are encouraged to participate in a library committee or similar body.

(c) There are library staff who have a major role in collection development, both in initial selection and withdrawal of stock, with advice from teaching staff if possible. The major role of these library staff is to ensure a balanced development of the collection, monitoring requests from teaching staff, filling gaps as necessary, while controlling the over-enthusiastic ordering of some teaching departments or individuals.

(d) There is no fixed allocation of book funds to teaching departments, but notional guidelines operated by the library which are flexible enough to adjust to changing patterns of publication and college development from year to year.

(e) There is a clearly developed written selection policy, updated as necessary from year to year, so that both teaching and library staff may be clear what the library is trying to achieve within the resources available to it. The policy developed would usually take cognizance of collection development by other libraries in the locality.

To summarize, the overall position, collections of the highest quality needed to meet college needs are generally considered to be developed where library and teaching staff have maximum knowledge of college activities, what the library is trying to achieve, and the range of relevant publications available.

One of the problems is that the achievement of this high quality, as Evans has pointed out (284:307), may be at the cost of extra staff time which may outweigh the benefits derived. Much of the argument about the merits or otherwise of blanket-order approval plans (e.g. 284, 502) hinges on the answer to this question, to which there are at the moment, no conclusive answers, although the general problems and trends are well reviewed by Kosa (44).

Measuring Collection Quality

The other major attempts to measure the quality of a collection have been through the use of subjective opinion, and the use of checklists. The opinion of academic staff, in evaluating the areas of the library collection relevant to their teaching and research interests, has been utilised by several United States academic libraries in the form of surveys (e.g. 659A, 692A), but most college libraries would receive such opinion on a continuous, if unsystematic, basis, partially as a result of requests for new materials.

The advantage of employing the opinions of academic staff users is that they are likely to be knowledgeable about the literature of their own fields of expertise, and can relate the collection, in detail, to their course or research requirements. However, there are several disadvantages. Parts of the collection may not be surveyed because there is no member of staff currently interested in that particular area; experts may disagree; staff may be unaware of much, particularly recently published, material in a subject, or may have a restrictive view of the overall role of the library; they may already be conditioned by poor library resources to expect little from a collection; the answers may be biased as a result of recent, non-representative, experience in obtaining particular items. Many opinion surveys give little more than a very general view of the quality of part of a collection. As Bonn's review of such methods (156) has shown, it is difficult to know the exact meaning of answers such as 'poor', 'fair' or 'good' in relation to quality, or even the usefulness of answers such as 'adequate to meet undergraduate course requirements' or 'adequate to support postgraduate research'. Although subjective opinion may be valuable as a guide to areas of possible weakness within an individual collection, its role seems limited in relation to the possibility of obtaining any measurable aspects of the quality of collections as a whole, particularly when the practical difficulty of obtaining an overall unbiased opinion is considered.

Nevertheless, the selection and acquisition policies of many libraries are based on an extension of this subjective approach. Developed in some detail by Stanford University

Libraries is a policy, for example, closely followed by the James Cook University Library, in which collection development is specified in a comprehensive statement laying down guidelines for the development of each subject area. Each area of interest to the university is allocated one of the following 'development levels':-

"A (Intensive) level: This level is intended to support major areas of research within the Department with a high degree of adequacy and self sufficiency and a minimum reliance on inter-library loan or other outside resources. An A level collection should aim at the exhaustive coverage of all print (including microtext) and appropriate non-print material in that field. In general any A level subject area must be very narrowly defined. Subject example: Tropical Cyclones.

B (Comprehensive) level: This level is intended to support with reasonable adequacy the postgraduate needs of the Department within a broader subject area than that defined by an A level. There is more reliance on inter-library loans and the types of material collected are more limited than for the higher level. Subject example: Climatic Changes in Southern Hemisphere.

C (Beginning Research) level: This level is intended to supply everything needed for undergraduate teaching and the majority of works required for Honours research and Master's research not covered by a higher level. This level allows for selective purchase to develop more fully particular aspects of the subject area in response to pragmatic need. Subject example: Australian Geomorphology.

D (Teaching) level: This level is intended to meet all the needs of undergraduate teaching. Because of the generally broad definition of a D level it will also include major general serial titles required for both teaching and research. The collection should be self-sufficient since it is not generally possible to supplement it by inter-library loans. Subject example: Urban and Regional Planning

E (Reference) level: This level includes fundamental works in areas peripheral to the needs of the Departments as well as providing a broad coverage of subjects which are of interest to members of the University community, although not part of the academic programme. Subject example: Political Geography

Within the general limits of each level, each Department is required to specify the relevant languages, geographical areas, chronological periods and types of material to be collected." (42:1)

Variations of this approach exist in many institutions - for example, Harlow (348) suggests three levels - 'college', 'university' and 'research', while the University of Illinois has four levels - 'general', 'instructional', 'comprehensive' and 'exhaustive research' (691A). It is difficult to know how a policy of this type can help the selector a great deal in making a decision on whether or not to acquire a particular title. The subjective element will still enter the decision of determining whether the content of an individual work is of, say, 'Beginning Research' or 'Teaching' level. Nevertheless, the policy does mean that the library has clear guidelines on what it is to acquire. We see this approach as having considerable value in the C.A.E. context, once the most basic level of collection adequacy is achieved. Although there will be few areas in most C.A.E.'s for which collection development is required beyond the undergraduate teaching level, there will inevitably, and desirably, be such areas. If more advanced level collections are to be built up in C.A.E. libraries, we should regard it as essential, if maximum benefits are to be achieved with the funds available, that there should be clear detailed definition of the areas in which any C.A.E. library is trying to build its collection at a research level.

The use of checklists in measuring the quality of a collection has also been widespread. The method seems to have been developed in the United States, perhaps because of the greater availability in that country of suitable lists of material against which a collection might be compared. Since the publication of Shaw's 'A List of Books for College Libraries' in 1931

(610A), there have been several works available, culminating in the recently published American Library Association's 'Books for College Libraries' (112), whose purpose has been to supply a standard list of publications suitable for the initial collection of an American liberal arts college. The basic idea of the checklist technique is to take what is regarded as a bibliography of items suitable for the particular kind of library to be evaluated, and to check what percentage of the items in the bibliography are held by the library. Some arbitrary percentage held may be deemed to indicate overall adequacy, or more detailed comparisons on a subject by subject basis may be used to indicate areas of weakness in the library's holdings. Shaw's list was used to evaluate college library holdings as early as 1935 (250A), the 1967 edition of 'Books for College Libraries' arose from the building of three new undergraduate libraries in the University of California's new campuses programme (702), the Ontario New Universities Library Project list (537A) was used in building five new university collections in Ontario, while more recently both Turner (686) and Shabowich (610) have advocated the use of various editions of 'Books for College Libraries'. Similarly, catalogues of libraries considered to have good collections, such as Harvard University's Lamont (i.e. undergraduate) Library (351), and the University of Michigan's undergraduate library, have been used as comparative lists. Other evaluators have extended the comparative sources to include the lists published by professional and learned societies, guides to subject literatures and subject bibliographies (204), and even the holdings of the Library of Congress (401).

The problems of using checklists as a measure of the quality of a collection are manifold. First, most lists become quickly out of data, particularly in their coverage of science and technology. Although most lists of the type mentioned have been carefully compiled, they are not necessarily standards of quality themselves, and are, by their nature, selective - the library being evaluated may well contain other titles equally as valuable as those on the list. This is particularly important for the college library, for as both Burnett (201:440) and Knapp (408:30) have indicated, for undergraduate purposes

a number of titles may often be regarded as interchangeable. More seriously, any published list may not bear much relation to the needs or subject interest of a particular library. Also, we get back to the problem of assessing quality in the aggregate - what meaning can be placed on a finding that a library contains say 70% or 80%, of the items on some checklist? If the checklist has not been used in the library's selection process, then it is likely that a library holding a high percentage of items on the list would also hold a comparatively high percentage of items on a similar kind that are not included on the checklist, although there is also a possible danger that the sources used in compiling the checklist might be the same as those used in selecting materials for the library.

The attractiveness of using checklists as an approach to quality assessment is that they are relatively simple to use. However, for Australian C.A.E. libraries, we do not consider that there exist any published lists which may be easily used as the basis of assessing the overall quality of a collection. Nevertheless, the judicious and thoughtful use of literature guides and published bibliographies in subject areas of interest to particular colleges may be regarded as an aid in improving the retrospective quality of the collection and exposing weaknesses.

Quantity and Current Acquisition Levels

Use of checklists has also been made as a quantitative measure of adequacy for a collection. As stated above, one quantitative measure is the percentage of titles on a published list which are held by the library. This procedure has been used in reverse, in using the number of items on the list as an estimate of the number of titles that a library should hold, and the technique has been proposed by several authors in relation to current levels of acquisition for college libraries. Massman (494) used the annual total of items reviewed in seventy professional and scholarly journals as a basis for estimating an adequate annual acquisition of titles for a United States liberal arts college, while Garner (306:410) has arrived at a similar total based on the reviews in 'Choice', an American Library

Association publication directed specifically at the requirements of college libraries in the United States. More recently both Fernekes (294) and Cohen (239) have used the same method, using as a basis the number of books published in various sections of the 'American Book Publishing Record', a list which attempts to include all United States commercial trade publications.

Although the methodology is similar, the use of American Book Publishing Record for such a procedure implies that no judgement is to operate in relation to the quality of items considered, since the American Book Publishing Record is a non-selective listing, whereas both Massman and Garner's techniques include only items thought worthy of review, and which are reviewed favourably. Nonetheless, McGrath (477) has extended the technique by assigning Dewey classification numbers in detail to all courses at a college, and then estimating the required annual acquisition for the library on the basis of the total of items classified at the corresponding numbers in the 'Book Publishing Record'. One of the few detailed attempts to link current levels of acquisition both to the level of publication and to various factors individual to the institution was made recently by Voigt who pointed out, rightly, that

> '... very little has been written on annual funding for books acquisitions or how to calculate and justify the acquisition rate necessary to provide adequately for academic and research requirements' (700:263)

Voigt related his recommendations to:-

(a) A core acquisition level of 40,000 volumes per year based on the current level of publication of materials of research interest.

(b) Varying allowances (from 1,000 to 8,000 volumes) for each subject field in which research programmes are offered.

(c) An allowance for the number of undergraduate students.

(d) An allowance for sponsored research contracts.

(e) An extra allowance for libraries with limited access to other research libraries (700:268).

The approach is very similar to that adopted in many standards for estimating the adequacy of total collection size, but has, we feel, very little relevance to the Australian college situation, as it deals with the requirements of research institutions serving large populations. However, it represents an approach worthy of consideration, in an area where so few approaches have been suggested.

The validity of these techniques rests on the assumption of the 'critical' theory of book supply (see page 4 above) that the main factor which should determine acquisition level is the number of items published which are relevant to the college's interests, and of a suitable intellectual level, irrespective of the actual demands made upon the material by members of the college. This attitude is held by many librarians in universities and colleges, at least as an ideal, but the assumption remains unproven in relation to college libraries, where, as we have already suggested, many titles on the same subject may well be wholly or virtually interchangeable from the student viewpoint. Is it necessary that a college library should acquire every new title or edition of textbooks in, say, basic physics, sociology or mechanical engineering? An argument in favour of the critical theory is that it is impossible to predict whether an item will prove useful, and therefore it must be supplied in order to find out, i.e. the supply creates the demand. This is probably the strongest rebuttal that may be made to the pure demand theorists, who would provide only items demanded by users. It is likely that any library built purely on the basis of demand would be narrow and unbalanced in scope, but it still remains difficult to prove that this necessarily means that all relevant and potentially useful items in a subject field should be acquired to meet undergraduate needs, rather than merely an 'adequate' selection. A reading of the views of proponents of the critical theory indicates that the views are held more on the basis of faith than of evidence, but this does not mean that such views should be dismissed.

That quantitative adequacy in relation to current acquisitions appears to have been given a relatively small amount of

attention is slightly surprising in view of the fact that several studies have suggested that the rate of current acquisition is more important for overall collection adequacy than the existing size of holdings. As long ago as 1936, in an extensive study of 35 college libraries (710), Waples showed that there was a high correlation between subjective rankings of colleges and the level of their current acquisitions, expressed both in terms of the number of current periodicals taken (+0.74), and the average annual acquisition over the previous five years (+0.73). More recently, Beckman (142:7) indicated a similar high correlation between annual per capita circulation and the gross annual acquisition (+0.83) in established larger Canadian universities, while Moriarty (506) has suggested the importance of the number of current periodical subscriptions taken. In a study of United States universities, Piternick (558:229) concluded that the gross total of annual acquisitions was more important in determining adequacy than the acquisition rate, expressed in relation to existing holdings, but whether this is equally true for undergraduate level collections as opposed to research collections remains debatable. Apart from the attempts to link adequacy to rates of publication referred to above, the other approaches adopted have been in terms of expressing necessary growth:-

(a) As a percentage of the college budget.

(b) By comparison with existing levels of acquisition by various institutions.

(c) As a percentage of the existing collection held.

Current Acquisition Level and the College Budget

This approach was recommended by the Association of College and Research Libraries in 1959, when it suggested (118:275) that the library budget for college libraries should not be less than 5 per cent of the total educational and general budget of the institution. This has since been increased to 6 per cent in the latest A.C.R.L. standards. The wording in these standards is worth quoting, as it represents a typical statement of this kind:-

'Experience has shown that library budgets, exclusive of capital costs and the costs of physical maintenance, which fall below six per cent of the college's total educational and general expenditures are seldom able to sustain the range of library programs required by the institution. This percentage, moreover, will run considerably higher during periods when the library is attempting to overcome past deficiencies ... or to meet the information needs of new academic programs' (114:298).

Similarly the Canadian Association of College and University Libraries has variously recommended that the percentage of the institutional budget that is devoted to established medium-sized university libraries should be a minimum of 10 per cent (216:58), and that devoted to community college libraries 'for continued operation' should be 8 per cent (214:7). The investigation of the British University Grants Committee concluded (691:156) that universities should devote about 6 per cent of total recurrent budget to library expenditures.

This is not an approach which has been widely adopted in Australia, although the First Report of the C.A.C.A.E. did refer (28:40) to overseas suggestions of suitable percentages of resources that might be applied to college libraries, and compared these with the very much lower allocations existing in technical colleges in 1965 (average 2.7 per cent for the five largest colleges). The draft standards proposed for C.A.E. libraries by the University and College Libraries Section of the Library Association of Australia also proposed such an approach, recommending that the percentage of the 'college budget' (not defined) to be applied to the library should be:-

'10% in first year of courses
8½% in second year of courses
6½% in third year of courses
5% thereafter' (49:11).

One of the difficulties in using percentage approaches is in determining exactly what 'overall budget' is used as a base.

McAnally, is a detailed study of the problem in relation to the needs of California State Colleges (466:161), distinguishes between the overall recurrent college budget, and the 'instructional budget', a higher percentage of the latter being required.

There are several weaknesses in using this percentage approach. One is illustrated by the U.C.L.S. recommendations above. Any library will require a higher percentage of the college budget while the college is growing rapidly than in a 'steady state' situation, since in the former stage it will be investing heavily in retrospective materials to build up a basic collection in each new field. Whilst most recommendations recognise this fact, they rarely specify any percentage other than that appropriate for the steady state situation. Although the U.C.L.S. recommendations make some allowance for this fact, they are clearly inadequate to allow for a situation in which colleges may be growing at rates which are variable from institution to institution, and within an institution at different points in time. In any case, growth of student numbers and courses is likely to be over many more than three years, and possibly over decades, increasing rapidly in some years and more slowly in others.

Another serious deficiency is that percentage norms for allocation have rarely been determined other than by comparison with the existing situation in institutions at the time of the recommendations. The 1959 A.C.R.L. standards (118) and the U.G.C. recommendations (691) state specifically that the percentages have been derived from examination of the statistics relating to college and university expenditures. Such a procedure, if adopted in 1965, would have served the libraries of Colleges of Advanced Education extremely badly, and it would have been impossible for them to have developed to their present stage had they received only an average 2.7 per cent of their college budgets over the last decade. This indicates the crucial difficulty of the percentage approach - that it bears no relation to need. It is merely a device for dividing up the available funds.

Nevertheless, we recognise that in practice, this simple 'cutting up of the cake' approach is one that is widely adopted, both at the government level and at the level of the individual college. This is particularly true at times when budgets are being restricted in growth or even being cut back, and there is often considerable in-fighting amongst departments or services to maintain existing activities at as high a level as possible. Since, at such times, libraries seem to be a prime target for budget cuts, we see some merit in an approach which would ensure that the college library, although suffering along with other facets of college services, at least maintains its 'fair share' of the budget. The problem is in deciding exactly what minimum percentage should be applied, as there would appear to be no obvious reason why, for example, Canadian universities should be recommended to spend at least 10 per cent of their budget on libraries, as opposed to the 6 per cent recommendation for United States colleges and universities. Such a substantial difference can probably be explained only in terms of value judgements as to the relative importance of the library in an institution. (Or possibly because of the fact that most United States libraries serve larger enrollments than their Canadian counterparts, if economies of scale are a factor).

Both these reasons probably help to explain the wide variations currently existing in Colleges of Advanced Education, where in 1975, the proportion of colleges' recurrent budgets spent on the library ranged from 2% to 17%.

Current Acquisition Level - the Comparative Approach

The comparative approach to current acquisition level has been extended beyond budget percentages, to actual totals of items to be acquired, and to percentages of existing holdings. The totals to be acquired are usually estimated simply in relation to current statistics, as with the continuing statistical studies published by Purdue University in relation to libraries of the Association of Research Libraries (271). Regression techniques have also been utilised in order to estimate either future levels of annual acquisition, or appropriate current levels for libraries serving different numbers of users (579).

Once again, the difficulty is, as Summers indicates, that 'current conditions may not be a guide to conditions which ought to exist' (653:634). However, the fact that there has been found to be a high positive correlation between subjective rankings of the 'excellence' of institutions and the level of their current library acquisitions (221,710) suggests that comparative data should not be ignored, and that a survey of current levels of provision in those libraries considered to provide relatively good collections may well yield useful information. (In passing, however, it should be noted that correlation and regression analyses of the type mentioned say nothing about cause and effect, and there is no suggestion that a high level of current library acquisition causes college excellence - it is far more likely that both factors, and many others, are interdependent). The relevance of comparative data collected outside Australia, however, is likely to be small, since the institutions compared may be at quite different stages of development, quite apart from any differences in scope and purpose.

Current Acquisition Level and Existing Collection Size

The technique of recommending current acquisition levels in terms of a percentage of the current total holdings of the library is, rather surprisingly, widely recommended. A priori there seems no particular reason why the desirable level of acquisitions for the current year should be dependent on the number of items that may have been acquired perhaps over decades, and at times when the purposes and scope of the institution may have been quite different. In spite of this, several recently published standards for college and university libraries adopt this approach, and since the result derives directly from the recommendations for overall collection size, it is necessary that we should consider these first, particularly since the greater part of the effort to devise quantitative standards of provision for academic libraries has been given to specification of a recommended overall collection size.

Quantity and Total Collection Size

There have been a very considerable number of attempts to estimate 'adequate' size of total library holdings for academic libraries, particularly in the United States, and these have been reviewed in several publications (38,373,709,713,737). As Lundin has suggested (53:22), traditional approaches to the level of adequacy proposed have been to:-

(a) Set the standard in relation to the existing average collection sizes in libraries. This was the procedure largely adopted for the establishement of the 1971 British standards for College of Technology libraries (436), and was applied to the 'norms' recommended for Australian secondary school libraries (53:22).

(b) Set the standard at the 'best' or highest levels in existence. This approach was adopted by the Association of Research Libraries in the United States in 1969, when it recommended (120) holdings of 2 million volumes for major university libraries, based on the holdings statistics for fifty leading university libraries.

(c) Set the standard as targets, beyond even the highest existing levels, which are to be reached by institutions within a given period of time. Thus the standards recommended by the Commonwealth Advisory Committee on Advanced Education in its Second Report are described as 'an interim goal' and 'to be achieved in a relatively short space of time' (29:61).

The major drawback of the first two approaches has already been referred to above, i.e. that any standards derived simply from an examination of the existing situation merely reflect past history and bear no necessary relation to the real needs of the institutions involved. Even the highest existing levels of provision may be seriously inadequate, as was the case at the time of establishment of the Colleges of Advanced Education, when a quite different and higher level of funding for library collections was clearly called for.

However, all three traditional approaches have some merit in that they are firmly based on economic realities. Summers

has pointed out (653:636) that the problem of adusting any proposed allocation formula to political realities is a very real one, while Axford has stated in relation to the application of a proposed U.S. standard to university libraries in the State of Florida that:-

> 'To propose a formula which would require doubling the size of these libraries just to support present programs would be politically naive no matter what its merits' (124:98).

It may be that this is an unduly pessimistic attitude, and that Australian librarians and, indeed, the Commission on Advanced Education, are made of sterner stuff, for there is no doubt that the recommendations of the Commission, based on the advice of its Library Committee, have gone well beyond doubling the size of most C.A.E. libraries in a very few years. This indicates that in a favourable economic climate, recommendations based on real need can and do achieve substantial improvements in a short space of time.

Nevertheless, in any situation where deficiencies are not immediately apparent to even the most hardened administrator, we can agree with Lundin (53:23) that to establish standards too far beyond the reach of an institution is to lose credibility. Correspondingly, both Lundin (53:23) and Fox (298:100) warn of the danger that to establish too low a standard is likely to stifle the development of those libraries which have the potential to go beyond recommended levels, and may have a positively de-motivating effect. Even though most standards for the size of collections clearly state that the figures proposed are to be regarded as minima to be achieved by all libraries, there is a significant danger that such minima will become interpreted by college administrators as optima or even maxima, and there will be no incentive for colleges to improve their collections further.

This fact has been recognised in more recently proposed standards. For instance, the latest college standards of Association of College and Research libraries in the United States (114:279) set relatively high quantitative levels and then grade each library A, B, C, etc. according to whether they

exceed or achieve various percentage proportions of the recommended levels.

Core Collections

Early quantitative standards for overall collection sizes tended simply to specify a basic minimum size which every college library collection should exceed. For example, the 1959 standards of the British Library Association for libraries of Colleges of Technology (439:9), stated only that college libraries should contain a minimum of 10,000 volumes (since updated in the latest, 1971, revision of the standards (436:9) to 10,000 titles in colleges with no degree-level work and 25,000 titles in colleges offering bachelor's degree programmes). Similarly, the University Grants Committee, reporting in 1967, suggested only that an average-sized British university library should contain an optimum level of 500,000 volumes (691:266). Even in 1971, the Victoria Institute of Colleges suggested merely that all multidisciplinary college libraries should contain a minimum of 50,000 volumes (75:13).

The justification for simply specifying a basic minimum collection size for a library appears to derive from the view that there is a certain minimum level of provision below which it is impossible to give an adequate level of service, regardless of the range of courses offered and the number of students and staff served. Although this appears a reasonable idea, nowhere is the exact purpose of this basic allocation satisfactorily argued. Since it is independent of course range and of student and staff numbers, its provision presumably relates primarily to the purpose of giving access to the major developments of civilization and promoting the individual's intellectual, cultural and social development. Yet, it is clear from most of the United States standards that the 'basic collection' does in fact also include the basic materials for courses studied at the institution, as well as in subjects in which no courses are offered. It is not possible, obviously, to make a clear differentiation between 'course materials' and 'general reading materials' since many or even most items may serve both purposes adequately. However, if a relatively large basic collection is

specified, which includes course materials, it is likely that formulae which also have allocations for each course may give smaller allocations per course on the grounds that the library already contains basic items in a subject, so that the true cost of materials which arises as the result of new course development is underestimated. This is an important consequence in C.A.E. libraries, which often serve colleges with a limited course range, with a strong likelihood of expansion.

The 'core collection' concept has continued in standards down to the present day, as part of more complex formulae, yet it remains true that there has been inadequate examination of the reasons for specifying the size of the 'core' at the levels suggested. The 50,750 volume core suggested by Clapp and Jordan (230:374) derives from the size of undergraduate library catalogues at the University of Michigan and Harvard College (351), while the latest 85,000 volume basic collection recommendation of the Association of College and Research Libraries (114:279) derives similarly from the list decided upon for the establishment of libraries in the new campuses of the University of California in 1965 (112). Since it is clear that such lists in fact contain many items bought to meet basic curricula of the typical four-year undergraduate liberal arts type programme common to many United States universities, the wholesale acceptance of these levels by some Australian recommendations seems questionable. The greatly different levels of 'core' suggested simultaneously by the A.C.R.L. for junior colleges (119:203) and for four-year colleges (118:278), in the United States, are explicable only in terms of the different scope of the two types of institution, and mean that the concept needs serious re-examination in the Australian C.A.E. context, with widely varying course ranges from institution to institution.

Allowance for Student and Staff Numbers

However, it was recognised much earlier in the United States that it was of dubious validity to propose a minimum level for collection size without any reference to the size and scope of the institution to which that level was to apply. The most obvious difference between colleges (or perhaps the most

obvious one that was easily measurable - a qualification which needs emphasizing), was the number of students and staff which they served. As early as 1933, McCrum suggested (470:15) that a variety of optimum collection levels for college libraries should be specified, according to the approximate number of students in the colleges:

> i.e. 50,000 volumes for colleges with 200-500 students
> 75,000 volumes for colleges with 800-1000 students
> 75,000-100,000 volumes for colleges with 1000-2500 students.

This was an approach that was to be adopted thirty-six years later by the Commonwealth Advisory Committee on Advanced Education, and with recommendations not greatly dissimilar in quantitative terms (29:61). In the interim, United States standards had been laid down more officially in 1959 by the Association of College and Research Libraries which recommended:-

> A basic collection of 50,000 volumes for colleges with up to 600 students,
>
> Plus 10,000 volumes for every additional 200 students (118:278)

The next step in attempting to relate recommended levels to specific variations in college requirements was in making allowances for the course level of students and not simply the overall student numbers. The American Library Association recommendations for college and university libraries in 1947 suggested (93:v.2:xii) that each member of the institution should be given a weighting:-

> i.e. 1 unit for each lower division (1st/2nd year) student
> 2 units for each upper division (3rd/4th year) student
> 3 units for each honors student
> 4 units for graduate student
> 5 units for each member of faculty staff.

The standards then recommended a basic collection of 40,000 volumes for colleges with up to 800 population units, plus 25 volumes per unit for the next 700 units and 5 volumes per unit over 3,000 units (93:v.2:8). (A recommendation which,

incidentally, suggests considerable economies of scale in provision).

This approach probably derives from the use of similar weightings in dividing up the annual book budget in many United States colleges in the 1930's and 1940's, for example, at Goucher College (290), University of Wichita (356), and University of Texas (242). The technique of applying weightings in terms of integer numbers appears to have lapsed for the purposes of standard specification, probably because:-

(a) It is unlikely that the varying needs of the various 'levels' of membership of the institution can be expressed as simple integer ratios.

(b) There was considerable disagreement amongst librarians on exactly what weighting should be applied to each level.

However, the idea of a differential per capita provision for various groups within an institution has been continued down to the latest A.C.R.L. college standards, which specify a level of provision per member of faculty staff different from that per student (see Appendix I). A brief perusal of the summaries of standards in Appendix I reveals, however, that there has been no agreement on the per capita provision to be made for each category. In some standards all levels of students, including graduate students, are regarded as equal, while in others, there are variations by a factor of 5 or more. Similarly, specific provision is made for each faculty member in some cases, while no such provision is suggested in others.

Allowance for Range of Courses Offered

The other major factor that has been introduced to many of the more recently published quantitative formulae for collections has been the provision of an allowance based on the number and level of courses offered by an institution. Again, this is a factor whose base may be relatively easily measured in most cases, although such terms as the 'number of undergraduate majors', used in some formulations, are capable of a variety of interpretations. Clearly also, the range of courses offered by

an institution is a major factor of account in determining the range and thus the quantity of materials to be acquired. Two colleges may contain the same number of students and yet offer a significantly different breadth and depth of courses. Many C.A.E.'s situated in country areas, for example, have a much lower number of students engaged in each course area than is the case in the large metropolitan institutes of technology.

This allowance per course approach probably derives once again from formulae adopted for the division of library book budgets between college departments which was practised by U. S. colleges and universities in the 1930's, e.g. at University of Texas (242), but its extension to collection standards appropriate for a variety of institutions was first proposed by Clapp and Jordan in a report relating to higher educational institutions in Ohio State in 1964 (229). The proposals of this report, which were made more widely available in an article published in 1965 (230), have had a considerable influence, and the great majority of quantitative collection formulae proposed since that date, both in North America and in Australia, reflect the approach and levels of provision suggested by Clapp and Jordan. Nevertheless, the authors themselves regarded their proposals only as tentative, and as a basis for further discussion. Recognising the difficulties of any formula approach, they stated:-

> 'It may be validly objected that little more has been accomplished than to transfer the focus of conviction from an unknown whole to the unknown parts of which the whole is composed.' (230:380)

A major problem with any approach which makes allowances for each course offered is the increasing tendency of academic institutions to offer interdisciplinary programmes of study, with students able to combine many areas of study within an individual programme. It then becomes difficult to determine what exactly constitutes a 'course' for the purposes of making a funding allowance. Spyers-Duran has highlighted this problem at the undergraduate course level (640:3).

Validity of Formula Approaches to Quantity

A comparison of the Clapp-Jordan formulation with the latest standards of the Association of College and Research Libraries, and with those tentatively proposed by the Library Association of Australia's University and College Libraries Section (see Appendix 1) shows clearly that they have been compiled on very similar principles. However, an examination of these, and the many other standards based on the Clapp-Jordan approach, such as those proposed for institutions in the American states of New York (399), Maryland (150), Nebraska (640) and Washington (377), once again reveals the lack of agreement on the allowances to be given to courses of a particular level.

The original Clapp-Jordan formulation consisted of a basic collection size estimated from the number of items included in various standard bibliographies such as the catalogue of the Lamont (undergraduate) Library at Harvard College (351), Trinkner's 'Basic Books for College Libraries' (676A) and the University of Michigan undergraduate library shelf list, together with allowances which appeared to be applicable in the then current situation in Ohio State colleges. The formula thus rests on the validity of using such data as bases for generally applicable formulae. Since there is evidence that the size of recommended 'standard' lists of books for college libraries is tailored to the likelihood of those libraries being able to acquire all or most of the items listed, i.e. an economic approach, and since there is little reason to suppose that the situation in college libraries in Ohio State in 1963 has any necessary relation to that existing in Australian Colleges of Advanced Education in 1976, any such general validity must remain, at best, doubtful.

A closer examination of some of the formulae outlined in Appendix 1 suggests that the exact weightings given to the various factors of basic collection population and course range have been influenced by the existing situation in the institutions to which they apply, and that succeeding recommendations have tended to propose formulae which result in higher and higher

levels of provision. Withers' recent descriptive review of standards throughout the world (737) shows the great discrepancies between recommendations for collection adequacy in such countries as Mexico, India, West Germany and the United States, at their different levels of economic development, and it is possible to agree with Humphreys that:

> 'Almost all the standards ... have little or no validity outside the environment for which they were invented' (373:152).

The process of continued revision of standards, and the increasing attempts to allow for institutional variations in quantitative formulations reinforce this view that there are no absolute desirable levels of provision, and formulae simply reflect demands at the institutional level and are designed to be capable of achievement and applicable over a limited time span, albeit one of several years.

In relation to possible application to Colleges of Advanced Education, the quantitative formulae examined suffer from five practical drawbacks:-

(1) Most formulae are based on the requirements of overseas institutions which are likely to have been in different stages of development, and are not necessarily relevant to the current Australian situation. Since Australian Colleges of Advanced Education and their libraries have been going through a period of extremely rapid growth and development, there is little relevant empirical data on which quantitative recommendations might be based.

(2) The heavily technological or teacher educational base of many C.A.E.'s is likely to present difficulties of applying any allocations in which possible subject differentials are ignored, as in the case in most formulae. (This may well be justified for formulae whose application is to multidisciplinary colleges with wide ranges of courses, when an averaging procedure may be valid, but there are obvious dangers in application to colleges with a restricted range of disciplines.)

(3) The standards proposed rarely include any quantitative recommendations relating to the provision of audio-visual materials, which are to form an increasing proportion of most C.A.E. library collections. This is not through oversight, but because of the conclusion that, to quote the 1975 A.C.R.L. standards:-

> 'Higher education has thus far had too little experience with non-print library materials to permit tenable generalisations to be made about their quantitative requirements. Since consensus has not yet been attained among educators as to the range, extent and configuration of non-print services which it is appropriate for college libraries to offer, no generally applicable formulas are possible here.' (114:279)

A cursory look at the 1975 statistics relating to holdings of non-print materials by C.A.E. libraries suggests that any generalisation is likely to be equally difficult to arrive at in Australia. As both Radford (62:238) and Turner (687:8) have indicated, even the counting of audio-visual items in a meaningful way still presents problems, and there is no universally accepted definition of a volume-equivalent for such materials, although an examination of the more recent United States standards outlined in Appendix 1 reveals that, at least there, some kind of consensus is emerging.

(4) As discussed above on page 24, the standards tend to give relatively little attention to recommendations for current annual acquisition levels. As C.A.E. libraries move into a steadier growth situation, with fewer new course needs to be met, it is likely to become relatively more important to specify current acquisition in a meaningful way than to concentrate on determining an adequate level of overall collection size. As indicated earlier on page 30, many formulae base their recommended current annual acquisition level simply as a percentage of the recommendation arrived at as a result of applying the formulae for overall collection size. Recommendations

(excluding any special provision for the first few years of a new college's development) range from 4 per cent to 10 per cent per annum, with the majority of recommendations at the 5 - 6 per cent level. A level of 6 per cent was advocated by Clapp and Jordan (in their original report (229), although not in their later article (230), where there is no mention of current acquisition), and several comparative studies of library growth rates have suggested that six per cent is a desirable annual growth rate for a university library. The figures appear to derive from Fremont Rider's study of large United States university libraries (586), which indicated that research libraries doubled in size every sixteen years. More recent comparative studies have indicated, not surprisingly, that the growth rate is higher in smaller university libraries than in large ones, even though their absolute level of annual acquisition may well be considerably smaller. (Rider's conclusions have been seriously questioned (558:224) as regards general applicability, and it is certainly doubtful whether a growth rate desirable for a research library, which undergoes a minimal amount of discarding of material, has any validity in relation to a college library which serves mainly non-research requirements, and which might be expected to undergo a continuous weeding programme, as material becomes obsolescent, or much less heavily used, with the passing of time.) A priori one would expect that the ratio of annual gross acquisition to existing holdings would be greater in a medium-sized college library than in a large research library, with the ratio, in a steady-state situation where the college is not expanding its courses or student numbers, related to the average rate of obsolescence of library material. Annual net acquisition, on the other hand, after allowing for weeding of items no longer required, might well be lower, as was suggested earlier on page 12, in the discussion relating to the possibility of 'no-growth' college libraries.

Any percentage growth formula for annual acquisitions would only be applied, therefore, after taking into account:-

(a) New provision for course introductions and changes in student/staff numbers.

(b) The rate of discarding of obsolescent materials.

(c) The rate of increase in the publication rate of materials relevant to the college's interests.

However, in spite of these considerations, it would appear to be quite possible for the percentage approach to be applied to annual levels of acquisition, provided the method of application is clearly delineated, as with the standards proposed by the Association of College and Research Libraries (114).

(5) Many of the standards that have been suggested have ambiguities as regards their detailed application, although they may appear relatively straightforward at first sight. For funding on a comparative basis, it is essential that any application be carried out in each college in an identical manner. Spyers-Duran, for example, has heavily criticised the Clapp-Jordan formula on the grounds of vagueness of terminology (640:3).

The quantitative formulae reviewed also suffer from theoretical drawbacks, which are perhaps more serious. As described, the general development of quantitative formulae has been in the direction of widening the range of factors given quantitative expression - to include a basic collection need, levels and numbers of students and staff served, levels and numbers of courses, and annual acquisition requirements. However, there are many factors which affect the adequacy of a library's collection in practice, which may have a greater importance than those quantified, but which cannot be measured easily, and so are not included in formulae. Clapp and Jordan recognised this fact, when they listed those factors (230:373) they regarded as important:

(a) The student body - size, composition and background.

(b) The faculty - size, research involvement and 'library-mindedness'.

(c) The curriculum - range and level.

(d) The methods of instruction.

(e) The availability of study space on campus.

(f) The location of the campus in relation to other libraries.

(g) The intellectual climate - inducements and distractions to study.

They then went on to say:-

> It is obvious that these factors differ widely in their susceptibility to measurement. Only those that can be most easily and meaningfully measured were given places in the ... tables which constitute the formulas' (230:373).

What Clapp and other authors of quantitative formulae are saying, in effect, is that in spite of the fact that they are ignoring many of the factors which in individual institutions affect the demands put upon the library, and hence affect the adequacy of the library to meet those demands, they still feel that standards of the kind they recommend have a useful function in relation to a range of institutions, if set at an appropriate level.

We are inclined to agree. It may be, as Lundin suggests (53:24), that quantitative standards of the kind described serve only an economic purpose, and are appropriate only within a given context at a particular stage of development. Clearly, it is not possible to quantify for each institution the effect on demand of even each of the factors referred to by Clapp and Jordan, let alone all the other factors that might have some effect. The mere specification of total collection size certainly is of no help in deciding how adequately that collection would cope with the specific breadth and level of demands in a particular institution. Adequacy in a particular case will depend on how well individual items have been selected to meet needs, and how efficient the library is in maximising the

accessibility of those items.

Nevertheless, whilst accepting these drawbacks, we believe that librarians who have dismissed the value of such standards, have not fully understood their function. The use of overall quantitative standards is in ensuring what might be called 'external adequacy' for a collection. It is particularly important in the Australian context, in which C.A.E.'s are funded almost entirely from the same government source, that college administrations and bodies advising government on funding levels should have access to guidelines for development of library collections. Overall quantitative standards which rest on a strong empirical base allow funding (which must by its nature deal in quantitative terms) to be apportioned on other than an *ad hoc* basis, and influence administrators to improve the position of those collections which appear most inadequate by comparison with a realistic standard, and perhaps more importantly, in relation to how well other college collections compare with the standard. Since the range of courses and numbers of students and staff in an institution are the most influential factors in determining the overall funding level for a college, it is not unreasonable to allow such factors to play a major role in determining an overall level of funding of library collections which would at least allow 'adequacy' in terms of a desirable input to the collection.

A simplified model of the role of standards is illustrated in Figure 2.1, which shows the flow of funds and influence on decision makers.

Our conclusion is that quantitative standards specifying 'external' collection adequacy are desirable, that it is feasible, given sufficient empirical data, to produce such standards relevant to the situation in Australian C.A.E.'s, and that the task is largely one of producing the necessary data to be used as a base.

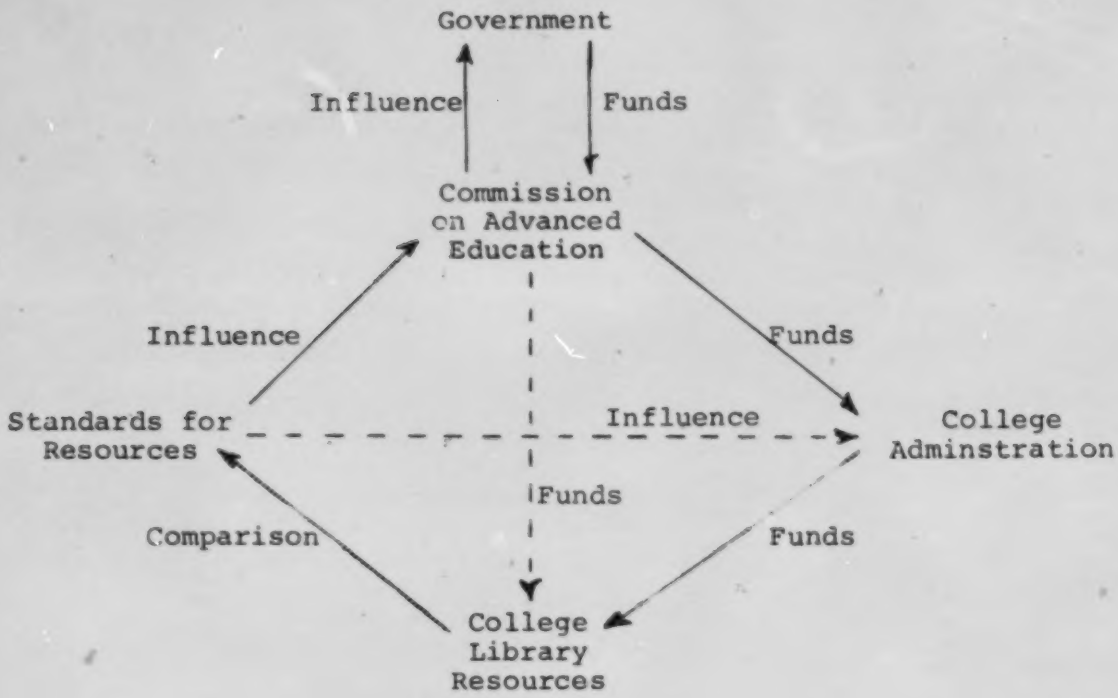

Figure 2.1

4. PROVISION AND AVAILABILITY

As indicated earlier, there have been severe criticisms of the traditional approaches to collection adequacy which have been described thus far, on the grounds that such approaches do not, and can not by their nature, relate collection adequacy to the individual pattern of needs and demands that arise in each institution. This has led to the development of a series of alternative quantitative approaches which attack the problem of collection adequacy from the user viewpoint. The assumption of these performance, or 'goal', approaches is that the adequacy of a collection basically rests on whether it is able to meet the needs of readers, as expressed by the demands that they make upon the collection.

The validity of this assumption is best examined by considering the process in which the underlying needs of those served by the library interlock with the library service. This is illustrated by Figure 2.2, which is closely based on the ideas

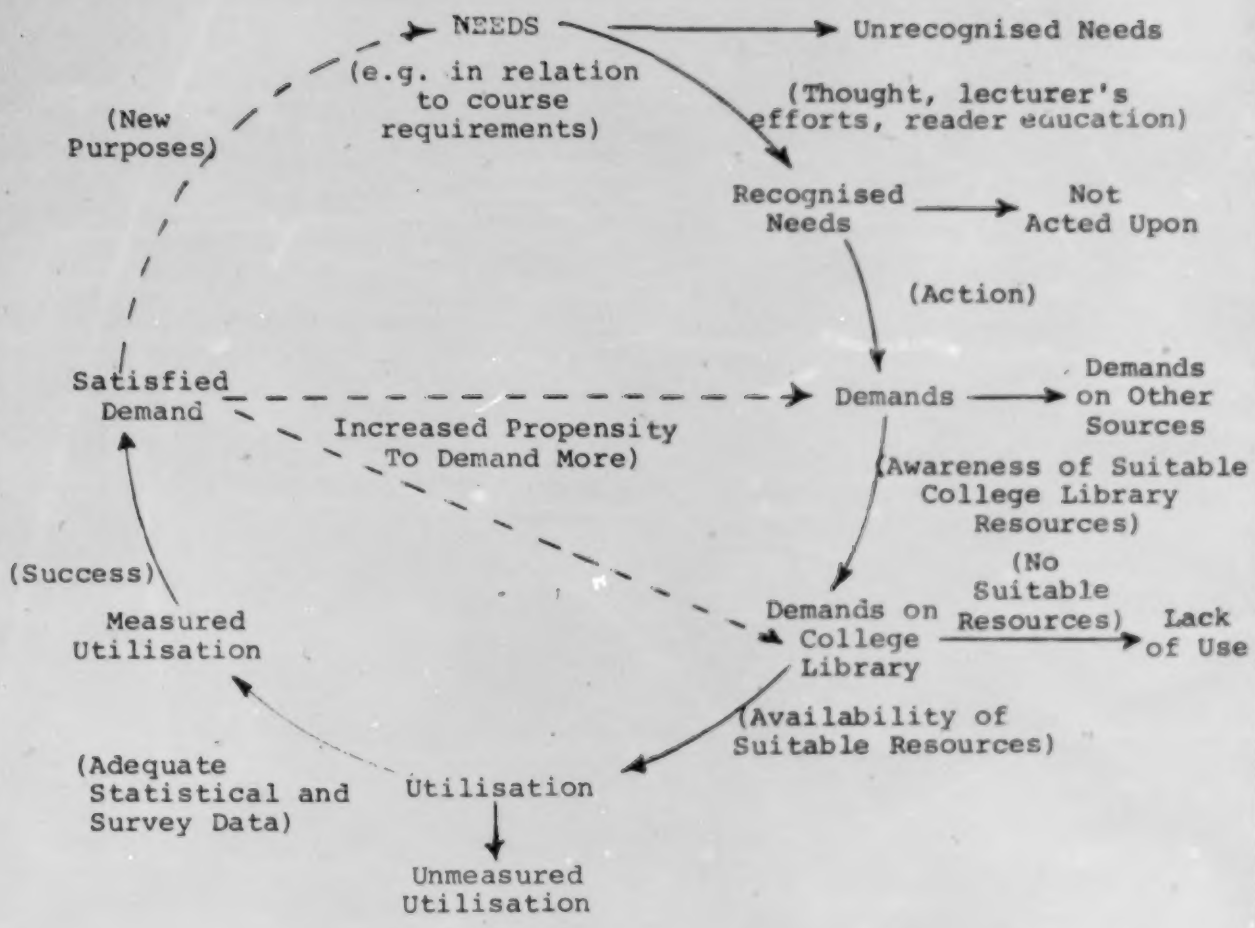

Figure 2.2

in Orr's excellent review (543) of quantitative measures in library service.

Needs and Demands

The underlying needs of potential users of the library are factors over which the librarian has no control, and arise from the various purposes of members of a college, such as requirements to complete a course of study. The librarian has some influence in helping the clientele to recognise its needs, for example by programmes of reader education and by promotion of library resources of which students were previously unaware. They then recognise these resources as being relevant and

necessary for more effective studies. But the more important influences on this process are likely to remain those of self-recognition and determination of objectives, and explicit course requirements outlined by lecturers and tutors. Of the recognised needs for resources, only a proportion are acted upon in the sense of being translated into demands (e.g. a student may realise that he needs to read an article in order to write an essay of greater quality, but still not bother to try to obtain it). Again, the library may have an influence on this process, as the decision of a user whether to try to obtain an item is likely to be influenced by how simple and successful such a process has been in the past - if he feels that there are no readily available sources of the material sought, then he may well not bother to search. Clearly, the next stage of the process, the decision whether to address the demand to the college library or to some alternative resource, is likely to be heavily influenced by the potential user's perception of how adequate the college library is likely to prove in supplying the required document or information, as compared with alternative sources. In the case of a C.A.E. student these might be, for example, a university or state library, a public library, a company library, a bookshop, or a personal collection.

Of the demands placed upon the college library, only a proportion will result in the actual utilisation of material, as in some cases the library will be found to lack the necessary documents, either because they have never been acquired, or because they are not retrievable within the limitations of time available to the potential user. Here, the procedures adopted by the college library may have a considerable influence, not only because of the extent and quality of material selected for inclusion in the library, but also in determining how much of the material in the collection is actually on the shelves when required, how good library staff are at retrieving items in the collection, and also how rapidly items not within the collection may be obtained from other sources.

Of the utilisation that is made of material obtained via the college library, only a proportion is recorded on a regular basis. In the great majority of libraries, statistics relating

to the number of items borrowed from the collection or via inter-library loan, are recorded reasonably accurately. However, even such statistics are only an indirect, and not necessarily valid, indication of the the amount of use that is made of the material - one item borrowed may never be read, whilst another may be read through avidly for many hours, yet each borrowing is recorded in the library as equal. But very few libraries have any accurate records of the number of items used within the library, although some keep a count of the number of items reshelved each day, which may bear some reasonably fixed ratio to the total number of items used without being borrowed. Any such figures do not necessarily tell us anything about whether the use made of material actually satisfied the demand of the user - a book may be used as a poor substitute for the item that was originally being sought, or an information request may be only partially answered - and for a true measure of collection adequacy we are interested not only in total use but in the extent of satisfied demand.

Satisfied demand, as Hawgood (567:A3.4) and Buckland (188:130) have stressed, is likely to result in an increased propensity for the satisfied user to return to the library in the future and make further demands. These further demands will lead to increased utilisation of the existing resources of the library, which will result in a lower availability of those resources to other users. Given no increase in the volume of resources available, the average success rate of the collection in meeting demands must fall, and in the longer term, this will result in demands on the library once again falling back to their previous level. (This idea of the 'homeostatic' library, in which the demand for material tends to relate to supply in such a way that the satisfaction level tends toward a norm, is developed further by Buckland (188:130) who speculates that the norm may well be around 60% satisfaction for an open access library.)

Performance Standards

The realisation that the crucial factor relating to a library's adequacy from the potential user viewpoint is not

whether the library has acquired a document, but whether the document, or information, required is made available within the period of time in which it remains useful, has led to the specification of quantitative standards in the form of objectives to be met by the library in response to user demands. Lundin (53:38) has outlined this approach, and given examples of the kind of objectives that might be applied, in a school library context:

> e.g. 'Given an interest or assignment in reading, 90% of the time, students using the library during its hours of service will find material within their ability level.'

This kind of objective led to the concept of the '90% library' as proposed by Bourne (166) and Urquhart (695), i.e. a library collection is to be regarded as adequate if it satisfies 90% of the demands placed upon it.

The concept of the '90% library' has been given strength by the results obtained from studies of patterns of material usage in libraries, and also by studies of patterns of citations listed in the literature of a subject field (reviewed in 448A).

The use pattern studies, invariably obtained from circulation data (i.e. data relating to items borrowed from the library), or from inter-library loan data, show conclusively that in all kinds of libraries, a large part of the use of the collection is concentrated on a relatively small proportion of the documents in the collection, and correspondingly, that a significant proportion of the loanable documents never circulate. Trueswell's various studies (680,681,682) have suggested, for example, that it is typical for 80% of circulation to be concentrated on 20% of a library's collection, and as much as 99% of circulation to be concentrated on 50% of the collection. These findings illustrate that a large part of a library's collection, and hence the cost of the collection, may be provided to meet a very limited amount of use, and have led to the realisation of the limited benefit which is gained in relation to the costs involved in a library striving to meet 100% rather than 90% of demands from its own resources, or even 90% rather than 80%.

Similarly, studies of citation patterns have indicated that in relation to the use of periodical titles, a similar concentration effect occurs, i.e. 80% of the citations from any given source may be to articles in 20% of the total number of periodical titles containing cited articles. An indication of the implication that this phenomenon has for the college is illustrated by a recent study undertaken at the University of Rhode Island (224). Of the citations to periodical articles listed in Master's theses in Education and English undertaken at the University, the library held 85.9%, contained in 318 periodical titles. But a total of 506 periodical titles were referred to altogether, i.e. the library would have had to acquire another 188 periodicals, an extra 59% of its existing holdings, in order to supply the extra 14.1% of the articles required.

The distribution of library circulation and periodical citation patterns have now being extensively studied in mathematical terms, and most such patterns appear to follow what has become known as 'Bradford's Law of Scattering', reviewed in (289). Although the universal validity of Bradford's Law has been questioned recently (536), and other statistical distributions have been held to provide a more exact formulation (534), there is no doubt of the concentration effect. For the practising librarian, the important result for collection-building purposes is that citation and use studies, of periodicals in particular, appear to offer a means to identify heavily used titles in various subject fields, and to calculate the approximate number of titles that might be required to satisfy any particular proportion of the demand for periodical articles. Clearly, the most used periodicals are not necessarily the most desirable for the library to purchase, since titles vary considerably in cost, and as Line (451) and Houghton (369) have indicated, it is cost-benefit that is important for library selection decisions not simply use. Nevertheless, once periodicals have been ranked in terms of use, subscription cost data can easily be included for decision purposes.

The studies also indicate the futility (in economic terms) of any library trying to become 100% self-sufficient and

this fact has led to a further series of studies, often using operational research techniques, designed at arriving at optimal solutions to decisions of whether to buy or to borrow documents. Brookes (169) and Elton (277) have concentrated on macro-decisions within a model of hierarchical library systems, while Williams (728) and Houghton (370) have tried to arrive at solutions relevant at the individual title level.

This performance approach faces a considerable number of problems of practical application in an individual library. First, although the standard proposed is the same for each library, each individual college library is faced with the problem of measuring its rate of 'satisfied demand', since the demand and use of library materials will vary considerably with each college's situation. This is the purpose of such a measure, designed to be a method of evaluation at the individual institutional level, but it means in practice, that unless the measuring procedure is relatively simple and inexpensive to carry out, it is likely to be ignored by the practising librarian, because of the pressures of everyday service. A methodology must be devised which does not consume too much staff time in addition to their existing duties.

Secondly, there is the difficulty of deciding what is a reasonable goal to aim at. Why should 90% satisfaction be decided upon - rather than, say, 99% or 80% or even 50%. Clearly, this involves a subjective assessment of what is a desirable level of service for a library to aim at. However, if Buckland's suggestion, referred to on page 48 is true (and there is every reason to believe it so), then if the satisfaction level is placed too low, demand will tend to fall off, while if it is placed at a high level, then demand will continuously rise as long as that satisfaction rate is maintained. It will not be maintained unless further resources are provided. Since it is a desirable aim for a college and its library to increase the amount of per capita use of materials in the library collection, it would seem wise to err on the side of aiming continuously at a high satisfaction level. Ashworth (110:67) has suggested that for British university libraries an appropriate satisfaction level might be 75%, while Urquhart (695:281) has proposed a

level of 85% immediate satisfaction and 90% satisfaction within one week, which seems, subjectively, a reasonable level in a non-research library.

Satisfying Demand

The last statement illustrates that 'satisfied demand' is a concept that needs considerably more definition. There are two difficulties in measuring satisfaction. The first is in determining the importance of the time taken for the demand to be satisfied. Clearly almost any demand placed on a library can be satisfied, given enough time. Even if the library's own collection does not contain the item or information required, the use of inter-library loan service usually results in the item eventually being obtained. But if it takes a month, or even a few days, to obtain an item, this may not be of any use to the prospective user. There is very little published data on the effect of waiting time on satisfaction for the average college user. However, personal experience and the views of various college librarians suggest that for most of the material required by undergraduate students, time constraints are fairly crucial. By the nature of their courses, students have a continuous flow of work to be completed throughout the teaching year and usually have a relatively limited amount of time to read for any particular tutorial, essay or assignment. Even in institutions in which undergraduate students have completely free access to inter-library loan services (which is not the case in many C.A.E.'s), experience suggests that in a high proportion of cases where an item is not held by the library a student does not resort to inter-library loan, because the time delay in supply is likely to be too long. An average one week maximum delay for a 'satisfied demand' to be achieved seems not unreasonable for the undergraduate student, although for both research students and teaching staff, who work within a longer time scale, a longer supply period is likely to be acceptable. A recent unpublished paper by Stuart (651) has provided some confirmation for this probability. His study of acceptable delay times in the supply of reserved books to the clientele at the University of Lancaster showed that undergraduates were significantly more disadvantaged by delays

in supply than other user groups, particularly compared with teaching staff. The median maximum acceptable supply time for undergraduates was under two weeks, compared with 4-5 weeks for research staff.

The second difficulty is more fundamental - that of determining exactly what is meant by 'satisfied demand'. Satisfaction is a subjective experience, and only via the opinions of each user can any estimate be made of the extent of demand satisfied from the user point of view. Even to obtain users' opinion may not in fact be a true measure of effectiveness of a library's service, since if the user expects very little, he may be 'satisfied' by incomplete information or a low level of service. The difficulties of assessing satisfaction on a continuous basis have led investigators of satisfaction levels to confine themselves to measuring simply the library's ability to supply known items on request.

A number of methodologies (which are discussed later in more detail) have been developed for determining known item availability. The assumption made in these methods is that a library that can provide a high rate of availability of items known to be of use and importance to potential library users, will also be capable of dealing successfully with 'subject' searches, in which no particular document is sought, but merely any document(s) that will supply the information required. There is no proof that this is the case, but it is a reasonable assumption, though one on which more evidence is required, particularly in a college library situation where, as we have indicated, a range of documents may be regarded as interchangeable for many student purposes.

Even if a high rate of availability for known item demands is achieved by a library, this does not necessarily indicate adequacy, since this depends also on what is being demanded. If, through previous experience, some of the potential users of the collection do not even bother to approach the library, the library may achieve a high rate of availability for the demands of the remaining users, perhaps only a small group, and yet be totally inadequate for the others, who are

forced to use any alternative sources of material. This might happen, for example, if a college library started to concentrate on research materials recommended by teaching staff, at the expense of a breadth of material, often needed in duplication, for student use. Similarly, all groups in a college may demand an equally poor standard of service, and get it.

The assumption is made, then, in any tests of availability, that the library is not so poor in its service that the legitimate demands of potential users are simply not placed upon it, or are placed on alternative library resouces instead.

To use Bommer's words:-

> 'The aim of the library should be to maximise the expected future exposures of its community members to documents, given current and anticipated future expenditure' (155:1).

If college libraries are indeed to improve their ability to expose their potential users to documents, and to improve their ability to supply material on demand, then it will not be enough for them simply to apply quantitative standards of the performance type, but they will need to be aware of the methods by which both the rate of demands, and the rate of satisfaction of those demands, can be increased.

This means that college libraries will need to be aware of the factors that are likely to affect the demand rate, and the factors that affect the availability rate.

Factors Affecting Demand

There have been a vast number of individual studies employed in college and university libraries with the aim of finding out who uses the library, and why some members of the institution make more demands on the library than others. Many of the results of these 'use studies', as reviewed by Ford (296), Woods (740) and Brittain (174), are applicable only to the individual library in which the study was conducted. The methodology of many other studies does not permit generalisations to be made. Nevertheless, the volume of studies conducted has enabled a number of important factors to be determined. In the great

majority of the studies referred to below, 'library use' has been taken to mean the amount of material circulated, i.e. borrowed from the library, whether from the general or reserve collections. Circulation, of course, represents only part of the use made of a library's collection, and in many college libraries, within-library use of the collection may well exceed extra-library use by a factor of several times. Studies by Mendelsohn (500) and Lubans (459) suggest that this ratio may well vary from college to college by as much as from 1:2 to 12:1. However, this ratio is unimportant as long as the data related to circulation reflects the overall pattern of use of the collection. Rolfe concluded (591) that there was, overall, a strong positive correlation between use of items borrowed and used within the library for materials that circulated infrequently, but a negative correlation for items borrowed frequently. More recent studies by McGrath (476) and Pinzelik (554) have suggested an overall high positive correlation between the use of items within the library, and their circulation rate. However, the tendency either to borrow, or use items within the library, will obviously vary considerably amongst individual students, depending, for example, on how close they may live to the library, and this may affect the validity of any generalisations made from data relating only to use expressed as borrowing rates.

The factors mainly regarded as important in affecting the demand rate are:-

(1) Characteristics of students

Early studies tended to concentrate on the idea that variations in library use depended on the characteristics of individual members of the institutions, such as their intelligence, or academic success, as expressed in assessment results. Woods' review of such studies concluded (740) that there was no evidence for correlations between the use of library materials and intelligence levels, and only a small positive correlation between library use and academic success (usually expressed in terms of the Grade Point Averages commonly used in the United States). Other studies have suggested a positive correlation between the extent of reading and social background (661:46),

and use of books and libraries at an early age (491), and a negative correlation with income (235,236), while a number of studies have suggested (308:92, 409:302) that women do more course-related reading than men. It is difficult to know what practical use the librarian could make of this data, even were all overseas data transferable to the Australian culture, and in recent years, few librarians have continued studies in this area.

(2) Course characteristics

The findings of some of the more extensive studies of library use, such as those of Waples (710) and Branscomb (169), and later of Knapp (406), indicated that a very high proportion of college library use was directly linked to course requirements. Various studies have suggested that this proportion may range from 75% to 95% of total library use. The studies also showed that a high proportion of course-related use appeared to derive from relatively few courses - for example Knapp's results showed (406:32) that 90% of circulation was accounted for by use connected with 25% of the courses offered by Knox College, while Hostrop showed (368:163) that 5% of the courses at the College of the Desert accounted for 50% of total circulation. These findings have spurred many attempts to discover which facets relating to course structure and organisation might be held to explain variations in use.

Level of study has been investigated, and several studies, including one at the University of Sydney (83:536), have suggested that, for example, final year undergraduate students use the library more than first year students. However, negative correlations between level of course and amount of library use have also been found by Barkey (132:116) and the relatively low correlations found are by no means conclusive. In any case, such correlations could be explained by the fact that later year students are those who are relatively more successful academically, and will contain fewer students who are going to drop out - an important factor in Australian universities and C.A.E.'s where the drop-out rate is often high in the first year.

The subject of study has been held to be a significant

variable (422:280, 471:65), but Waddle concluded (706:237) that this was not so, if variations in teaching method were accounted for. The course pattern of study differs in various subject areas. Engineering and Applied Science courses traditionally involve long hours of student class-contact with considerable periods of laboratory work, while students of the social sciences and humanities are generally expected to, and have more 'free' hours available to, prepare for tutorials and undertake written assignments. Both Mann (491) and Knapp (406) have indicated that courses with high student contact hours have lower rates of library use. This may be significant for C.A.E. libraries where, although no statistics are available, verbal evidence from colleges suggest that formal class contact hours may have declined in recent years. There is generally a link between subject of study and teaching method, but it appears that it is teaching method which is the significant determinant of extent of library use. To quote Knapp:-

> 'Where the instructor expected and planned for student use of the library, it occurred. Where he did not, it did not occur' (407:829).

A recent article by Smith (67:84) suggested the same conclusion, based on a study of students at the University of Melbourne, while all the major studies by Clayton (236), Knapp (406), Mann (491) and Waddle (706) have concluded that the decisive factor, outweighing all other factors, in determining the extent of library use in relation to courses, is the attitude of the individual lecturer or tutor, and whether that attitude results in a teaching method which encourages and expects a high rate of library use. Students use the library collection largely because their course requirements make it necessary for them to do so. This is a finding of importance to C.A.E. libraries. Successive reports of the Commission on Advanced Education and its predecessors (8:53, 29:45) have given support to moves away from the traditional lecture plus examination methods, towards teaching/learning methods involving continuous assessment and greater use of small-group programmes and independent study. To quote the Commission's Third Report:-

> "In the past years a rough measure of the work involved and the level attained by any course has been the total class contact hours required of the student. If there ever was any validity in this approach, it is now being serously challenged by the development of new teaching techniques aimed at self-education." (8:54).

If this encouragement is successful, and there is some evidence that changes in teaching method have taken place and are continuing to take place, then C.A.E. libraries must expect, and collections provide more for, a continuing rise in per capita use of the library. At the same time, colleges are increasing in size, and there is some evidence, though not conclusive, to suggest that larger class sizes may inhibit learning and assessment methods which involve indepedent programmes and intensive library use. However, given a fixed ratio of teaching staff to students, and suitable course organisation, there seems no obvious reason why the increasing size of colleges should hold back rises in per capita use.

One other course characteristic that has received some attention is whether courses are offered on a full-time or part-time basis. Studies have indicated (367:244, 368:162) that part-time students use the library less than corresponding full-time students, even allowing for the fact that they are studying fewer course units at any given time. But as Bryan and Hean have pointed out (20:70), this may be because the library regulations on opening hours and loan periods have been devised largely for full-time students and do not allow part-time students equal access to the material. It is possible to speculate also, that on average, part-time students will live further away from the library, and also have more convenient access to alternative library resources, such as those of their employing organisations.

The low use of college libraries by external students is likely to be largely determined by the lack of convenience inherent in obtaining items through the mail, and inability to choose relevant documents via browsing.

However, there has been virtually no serious examination of the implications for library collection development of a college offering a substantial number of its course programmes in an external mode. The Open University development in the United Kingdom relies a good deal on pre-packaged course materials sent to students, plus book supply via close cooperation with public libraries (209). In the United States most external studies developments do not appear to concern themselves with any central development of library collections in colleges to serve external students - a whole journal issue recently devoted to library services to off-campus students nowhere mentions the possiblity of mail book supply (145). Yet in Australia the University of New England has built up a collection of over 40,000 volumes specifically to meet the requirements of its external students (66:25).

The very few detailed surveys of the use of libraries made by external students suggest (333,670) that the students will use a wide variety of libraries, depending on their residential location, and that their own college library may supply only a small proportion of their total course reading material (670:10) even if their college library attempts to meet all requests. However, it seems quite possible that inappropriate loan periods, postal delays in supply, postage costs, lack of sufficient information from lecturers regarding titles recommended, and insufficient duplication may all lead to external students turning to whatever alternative local sources of books to which they may have access.

With an increasing number of external students in C.A.E.'s, and an already substantial total of over 9,000 such students (24:189), the virtual absence of any substantial published information on the best ways of providing library service to external students suggests that the Commission would do well to finance an investigation into the necessary library collections and services to be provided. We should expect different solutions to be suitable depending on the geographical location and dispersion of the students served. Negotiated access to other tertiary libraries, public library use, study centres with small library collections, and a mail service of originals

or microform duplicates from the central college library - all would seem to be appropriate, individually or in combination, to meet varying student circumstances.

(3) Characteristics of colleges

The early realisation that per capita use of the library varied considerably from institution to institution, and that such variations were often greater than variations in use within colleges, resulted in studies designed to elicit reasons for this variation. Some of the 'variations' are clearly the result of the fact that the 'library use' being measured was not the same thing in each institution. As the Librarian of the University of Western Australia has recently pointed out rather forcefully (72), the use of per capita circulation statistics as a measure of library use is meaningless if the libraries being compared have different lengths of loan period for items, or substantial collections whose use is confined within the library.

Even allowing for this, however, it is clear that there exist substantial variations in rates of use between colleges which, at least ostensibly, contain similar courses, students and staff. The location of the library is one important factor. As Allen (91) and Rosenberg (593:126) have indicated, information-seeking behaviour tends to follow the 'law of least effort' and in seeking information users will tend to follow a strategy which results in the acquisition of the minimum necessary amount of information, using the most convenient rather than the best source of information. This means that the location of the library within a college is of crucial importance, not in influencing the amount of use of materials that a potential user has to use to achieve his minimum aims, but in influencing the very considerable amount of use of materials that he will not read unless access is convenient. Paisley's work has indicated (547) that it is 'psychological distance' rather than simple geographical distance to a resource that is important in determining how much use it will receive. This means that factors such as covered walkways and easy stairway access may be important. The problem of geographical barriers has recently been tackled in some North American universities by the

introduction of 'campus delivery' services in which documents requested by telephone or internal mail service, are delivered to users by a library courier service - to the extent of over 60,000 documents per annum in one Canadian university in 1970 (493:1672). This may be necessary on a large campus, but it may also have considerable implications for library staffing levels.

Part of the 'psychological distance' may be reduced also by various factors relating to the library building. Allen has suggested (88:143) that the 'newness' of the library in itself is a factor in encouraging demand, while Bryan records (19) as typical the upsurge in demand after the opening of a new library building at the University of Sydney. Fishman and Wallitt have postulated (295) that even the positioning of seating in the library may affect use rates, while it is clear that the availability of seating in the library may considerably affect overall library use. Similarly readership surveys have indicated (452, 691:Appendix 3) that poor 'atmosphere' in a college library (resulting perhaps from lack of air-conditioning, poor lighting, etc.) may encourage potential users to go elsewhere.

Similarly, psychological distance of the user from the collection is cut down by various library service policies. Part of the rationale for reader education programmes (65:102) is that they stimulate the use of the library and its collection. More simple stimulation of demand can be achieved through special display of new books and existing stock, as public libraries have discovered (516:172). In general, more user knowledge of the collection is likely to result in heavier use of materials.

The location of the library, and the college, in relation to other possible sources of library materials is also of importance. Studies by Reid-Smith (580), Tucker (685), Goldwyn (319), Amundsen (198), Thomason (666) and Haas (338) suggest that it is common for between 10% and 30% of college and university students in metropolitan colleges and universities to use regularly libraries other than that of their own institution, in connection with their studies. The reasons for this use may be placed in four categories:-

(a) Convenience - which includes physical proximity to place of work, home, or regular travel route, and also more convenient access to materials via longer opening hours or fewer borrowing restrictions.

(b) Better conditions for study, as referred to above.

(c) Previous experience - which leads the user to judge that he has more chance of finding the required material in a library other than his own institution's library.

(d) Failure to find the material required in the institution's library - which may be because the material is unavailable, or because the potential user lacks knowledge of how to find it.

Clearly, even if the college library is perfectly adequate to meet all user demands, some use will still be directed to other libraries for reasons of convenience, but most of the other reasons for non-use are factors over which the college library has some control, either in providing a more adequate collection, or making it more easily accessible.

(4) Collection characteristics

The collection itself has long been held to be a determinant of the demand upon it, i.e. the supply to some extent creates the demand. Indeed, one of the strong beliefs held by many librarians is that this is the major justification for having larger library collections. Clearly, no demand can be satisfied from a library's own collection unless the material has been acquired already, but the extent to which the collection itself creates demand has not been subjected to detailed quantitative investigation. In a recent study McGrath showed (481:230) that the use of books in any given subject area in a university library had a high positive correlation with the volume of the library's holdings of books in that subject field. McDiarmid's study (471:73) indicated a positive correlation between per capita circulation and annual expenditure on books. But both sets of results may be explained by inter-correlated factors, e.g. it may be that colleges spending more on library materials do so as a result of a greater degree of support from the teaching staff, who also reflect this library support in

recommending more library materials to students - there are many possible interpretations.

Nevertheless, considerable efforts have been devoted towards the identification of characteristics of library materials that may be correlated with the use of these materials. This exercise is designed to serve three purposes:-

(a) To enable the library to identify prior to acquisition materials which are more likely to be used by readers - on the grounds that more heavily used materials are more desirable than lightly used materials. (This reasoning is taken as fully proven by many investigators, but it may be a fallacy if materials in different subject areas have intrinsically different demand patterns, or the actual demand in a library is that of only a subset of the total potential users.) As Evans has said:-

> 'If the library focuses on the heavy users and their known demands and needs, it can achieve an outstanding performance in terms of almost everything except accessibility of materials and services to the larger user population' (287:104).

Burchard (190) and Urquhart (694) have both, for example, suggested that materials in the humanities may be subject to a relatively low rate of use compared with those in science and technology, but this is no reflection on their value. Whether such an argument is equally applicable in a college, as opposed to research, library is questionable, however.

(b) To enable the library to develop semi-automatic methods for discarding materials that are unlikely to be required. This is particularly important in a college library, which in its mature stage must expect to discard a considerable amount of material each year, and needs to develop a relatively simple method for making decisions on individual items.

(c) With the aim of identifying a 'core' of heavily used material in a library which might indicate the number of volumes the library should contain, or at least, hold in open and convenient access. It has long been realised that a high proportion of college and university library use concentrated on a relatively small proportion of the collection (251:295). Trueswell's enshrinement of this general principle as the '80/20 rule' (681) (i.e. that 80% of the use of a collection is concentrated on 20% of the material), which has been shown in numerous studies (635,680,682) to be a good working rule-of-thumb, has led to suggestions that libraries should concentrate only on the 20% heavily used materials. The general applicability of the 80/20 rule in inventory theory, from which its use in librarianship has developed, suggests that whatever the composition of a college library collection, a similar balance of use is likely to apply, and that a reduction of the size of the collection to its 'core' could be repeated ad infinitum, reducing the library to an insignificant size, and in the process depriving most of the potential users of any relevant material. However, use data of this kind may be utilised in transferring materials to any short-loan or reference-only collections that may be desirable, and in discarding individual documents - as long as it is realised that they will require replacement with newly acquired material more likely to be used.

Early studies, such as that by Gosnell (324) tended to suggest that the age of an item was significant in determining whether it was likely to be used. This was a natural corollary of observations that documents apparently tended to become obsolescent, i.e. with time, they tended to be used less often. Line and Sandison have recently reviewed (448A) the whole question of 'obsolescence' of library materials in great detail. Their conclusions throw considerable doubt on the validity of using the data of most obsolescence studies as a guide to the discarding of library materials on the basis of their publication dates, or dates of library acquisition, largely because most

such studies do not allow for either the increased annual rate of utilisation, or the increased annual rate of overall demand with the increased size of population served. Seymour's reviews (609A,609B) on the identification of obsolete stock in libraries show clearly that the best predictor of the future use of individual documents in a library is the extent of past use that they have received. However, the identification of levels of past use presents considerable difficulty for many libraries, particularly those with manual loan systems. College libraries with a computer-based loan system have a considerable opportunity to use their system in the identification of both heavily used and lightly used items, and may use this data to assist in the acquisition, increase of availability, and discarding of the collection, as is done, for example, at the University of British Columbia (617,618) and Windsor University (328).

The basic difficulty with using the results of 'use studies' of the kind that has been discussed, as Line has indicated, is that they have little predictive value.

> '... what people do is invariably constrained by what is there; the present range of choices is limited, and we cannot tell from user studies what users might do given new choices or possibilities.' (449:328).

If a narrow range of material is provided, a narrow range of material will be used, perhaps heavily, but this is no indication of what demand potential users might make on a greater range of material, nor any measure of the adequacy of the library's collection. It is not demand per document that is important, it is demand per capita.

Factors Affecting Availability

This brings us to consider the problem of availability, which is inextricably linked to that of demand. As we have seen, the demand on a collection is affected by a great range of factors, including the previous experience of the potential users in trying to use the collection. As McClellan pointed out many years ago, the crucial question for the user is whether

an item is available when required, not whether the library has once acquired it. Availability for most users means ready for use at the time of a visit to the library:-

> 'It cannot be over-stressed that the field of immediate choice for the reader consists of the books actually on the shelves at the time of his visit' (468:73).

The rate of immediate availability depends on two factors:-

(1) The size of relevant collection acquired by the library.

(2) The use made of the collection.

Although, as we have suggested, the librarian has relatively little influence in affecting the rate of demand on the collection, he may have considerable influence in affecting the availability of material demanded, through the service procedures adopted by the library.

Much of the recent attention that has been given to the question of availability has arisen from the findings of work carried out at the University of Lancaster in England, which showed clearly that the use of a library could be increased significantly by changes in service policy. Much of this work has been reviewed in a recent monograph by Buckland (188). Buckland assesses the reasons why a book or periodical item might not be available when required by a reader, and makes recommendations for ways of improving availability.

Failure Surveys

Practical information of use to college librarians in improving the availability of material in their collections may be obtained by the various techniques of the 'failure survey' developed in recent years. Basically, the failure survey consists of an analysis of the reasons why users of the library fail to obain specific documents for which they are searching. As Line has indicated (443:37), a reader's failure to retrieve a wanted document may depend on a number of factors. These he divides, looking both from the user and collection viewpoints, into those of:-

(a) Reader failure

Level 1. Failure to come to the library when he wants books - for the many reasons discussed when considering demand rate, on pages 46-47.

Level 2. Failure to find in the catalogue the item he wants.

(i) Not in stock, i.e. the item has never been ordered for the collection.

(ii) In stock but not in the catalogue - this may happen through error, or if the item has only just arrived in the library, and the catalogue is not fully up to date. This is particularly common in libraries with cataloguing backlogs, as is the present situation in many C.A.E. libraries.

(iii) In the catalogue but misplaced - the more complicated the filing sequence the more likely this is to happen.

(iv) In the correct place in the catalogue but not found, e.g. because the user does not know the filing sequence, or simply because he has a wrong piece of information regarding the item sought.

Level 3. Failure to find the item on the shelves.

(i) Item missing.

(ii) On loan or in use within the library - the higher the use rate per document in the collection, the more often this will happen.

(iii) Misplaced on the shelves - the more complicated the shelfmark the more likely this is to happen.

(iv) In the correct place but not found, e.g. because the reader records the wrong shelfmark, or does not know the shelving sequence.

(v) In use for library staff purposes, e.g. for binding, or re-cataloguing - with no guidance to the reader that this is the case.

(b) Stock Failure

Level 1. Failure of the library to acquire a book.

Level 2. Failure of the library to provide a copy when required.

Level 1 Reader Failure

As Line has indicated (443:38), the measurement of 'Level 1' reader failure presents considerable difficulties, but it is essential that attempts be made, if libraries are to know whether they are in fact considered by their potential users as a convenient and successful source of material, and why some of their potential demand is diverted elsewhere. Some of the methods of reducing Level 1 failure, i.e. increasing the demand rate have been discussed on pages 54-62.

Level 2 Reader Failure

Failure surveys conducted at the Universities of Cambridge (606,696), Lancaster (193), Keele (273) and elsewhere (379,697) have suggested that failure caused by readers' inability to use the library's catalogue and location system accounts for a high proportion of the total failure to retrieve wanted items. Clearly it is incumbent on college librarians to strive to improve their readers' knowledge of their library's retrieval systems, through reader education programmes and better informal guidance procedures, and to ensure that their catalogues are as self-explanatory as possible (a common cause of failure, for example, has been lack of knowledge that wanted items are in a 'Reserve' collection, because this fact is not often clearly indicated in the main catalogue, but only in some separate

list). The fact that a high proportion of 'failure' occurs even when items are in their correct place on the shelves, shows that college and university library users do need more assistance than they are receiving in many libraries. Clear guidance systems around the library, and at the shelves, are simple to devise, yet may significantly improve readers' success rates in finding material.

In libraries with relatively high proportions of material on order relative to material in stock, or with substantial cataloguing backlogs, as is the case in many C.A.E. libraries at present, access may be significantly improved if this 'in process' material is listed in the main catalogue from the order stage. Again, it is crucial that the catalogue data be as up to date as possible both in respect of newly-catalogued material, and any internal library movement of documents from one sequence to another.

Level 3 Reader Failure

'Level 3' reader failure may also be significantly reduced by an examination of the reasons for failure.

Stock losses, either permanently, or temporarily as a result of illegal use, are known to play a considerable role in adding to failure. A recent study by the Cambridge Library Management Research Unit (441:2) quotes annual losses of up to 4% of the collection per year in British university libraries, and an incredible 7½% in one Canadian university library. Comparing this with the annual growth rate of only 3-5% existing in many such libraries, and with the realisation that most of the missing items are likely to be those in relatively heavy demand, it is clear that stock losses may have serious effects in reducing the effective availability of the collection. Many librarians have tended to regard stock losses in terms only of the material loss to the library - far more important is the user cost involved in unsuccessful searching which not only results in an immediate penalty, but is likely to reduce user's propensity to approach the collection afterwards. The Cambridge Unit has indicated (441:4) that the loss rate is closely linked to the usage rate - where there is a high rate of use of

material, and particularly where there is a high rate of reader frustration, there is a correspondingly high rate of loss. The reason given is that users are more likely to take items illegally if they feel they have a low chance of obtaining the item again in the future.

Binding policy has been shown by Buckland (188:49) to be important also. Most college libraries bind the majority of periodical issues that they receive, and this usually entails the issues being bound being unavailable for some weeks, or even months at some colleges. Buckland stresses that an important consideration in a decision for the establishment of a bindery within a library is not any possible total cost savings involved, if any, but the increased accessibility that an in-house bindery gives to material, which in most cases is recently published and likely to be in relatively high demand. The volume of binding in most C.A.E. libraries is not sufficient to justify the capital and recurrent costs involved in the establishment of an in-house bindery. Nevertheless, C.A.E. libraries may well consider a joint venture in metropolitan areas. Combined with a courier service collecting and delivering items, a twenty-four hour availability level might well be achieved in retrieving required items for the user. Even is such a venture is not feasible, individual libraries can improve availability by:-

(1) Sending more items for binding at periods during the year when reader demand is relatively low overall.

(2) Instituting a system of 'rush' binding for titles in heavy demand, whereby the binder agrees to a rapid turn-round time for a limited range of titles.

(3) Having an agreement with the bindery that items requested whilst away for binding may be recalled by telephone.

(4) Accepting the situation that inter-library loan service may sometimes be faster than trying to retrieve items from the bindery.

(5) Sending individual items for binding at a time when their use is likely to be low, e.g. not at the same time

as references to articles appear in the major abstracting or current awareness journals, when they are more likely to be requested by a reader.

Decentralisation

Decentralisation of the library's collection may also reduce availability. Leimkuhler has shown mathematically (429) that duplication in different locations provides a lower overall level of availability than duplication at a single location, although from the user viewpoint this may be balanced by the extra user convenience involved in accessing a decentralised library system. Atherton, in a rare 'before and after' study (122) of a university that moved from a decentralised to a centralised library system showed that after the collection was centralised the average user time to obtain items was the same as previously, but the rate of immediate availability of monographs rose from 59% to 73%. A small-scale study by Bartelt (135) recently suggested also that overall average retrieval time might be increased in a decentralized library system, though the evidence was not conclusive. The implication is that in order to provide the same level of availability, a college which has more than one library needs to be provided with greater collection resources. Although geographical factors may make branch libraries inevitable and desirable, it has to be recognised that such a development needs to be associated with a greater total collection size than would be necessary in a single central library, if the same level of availability is to be acheived.

Studies of the overall rate of availability of documents that have been acquired by the library show that as little as 45% of the books sought by readers may be on the shelves when required (677). The results of Meier (497:528) and Leimkuhler (427:40) in large university libraries suggested a general shelf availability range of between 50% and 67%, but other investigators have indicated that the immediate success rate may reach as high as 85% for monographs (696), and 95% for periodicals (557). Care must be taken to distinguish between the results of studies based on actual reader demand, and those

based on simulated demand using citations or other lists as a check mechanism.

Meeting Peak Demands

Availability in relation to actual reader demand will be affected by 'peaking' of demand concentrated on particular titles at the time of the survey, a factor of importance in all college libraries. Several authors (283,648,740) have emphasised the fact that overall library demand fluctuates throughout the year, and Llinas and O'Neill (454) have attempted to calculate the effect of this on overall book availability. More obvious is the fact that demand for particular titles is often very heavy, but only for a short period during the year. This phenomenon has led to the development in college and university libraries of various methods for coping with the demand. A Buckland has pointed out, faced with a demand for a title that cannot be met effectively, the library has the choice of any combination of two alternatives:-

(a) It may increase the number of copies it holds of the title, if this is particable within the time and cost constraints applying.

and/or

(b) It may reduce the length of the loan period allowed for the title.

To quote Buckland's conclusion:-

> 'If the library is intended to make documents available and if promptness is a virtue, then the cardinal rule of library stock control is that both the loan period and the duplication policy should be related to the level of demand for the title and to each other' (193:100).

Most academic libraries have tried to solve the problem via a combination of methods:-

(a) Creating a 'reserve' collection. This may be a 'closed reserve' situation, in which readers must ask library

staff for the document required. This is then loaned to them for a short period, typically of the order of 2 to 24 hours. Or it may be an 'open reserve' situation in which users may browse amongst the collection, but must either pass through a control point to borrow the items for the same short loan period, or are confined to using the items within the 'reserve' area within the library.

(b) Creating 'reference only' copies of heavy demand titles, whose use is confined to within the library.

(c) Heavily duplicating titles available under the normal loan conditions.

(d) Photocopying parts of books specifically recommended by lecturers, within the contraints of the Copyright Act.

It is interesting that the major complaint of students regarding library services, recorded by a number of library surveys (41,265,408), is that the library was held not to have enough copies of heavily demanded titles. Surveys in British university libraries (233,453,692) specifically record student requests that the use of more material should be confined to the library instead of being available for loan, so that more people may have access to heavily demanded titles.

Loan Policies

The realisation of the increase in availability that may be achieved by confining items to within-library use, has led to the serious suggestion in the United States (564) that university libraries should be reference libraries only, and should not loan material from their collection. It is unlikely that such a suggestion could be regarded as a solution in C.A.E. libraries, which contain substantial numbers of part-time students, while in those that serve external students the suggestion is clearly impossible if any service is to be given. Nevertheless, short-loan or reference-only collections are regarded as a solution from the point of view of the library, and there is a danger that the cost savings in duplication which this 'solution' offers may be regarded as attractive,

without giving full consideration to the user costs that may be involved. However, the introduction of computer-based loan systems is likely to enable the transfer of items in heavy demand from one loan category to another to be effected at lower costs in staff time, and makes more practicable the operation of the general principle that loan periods should be determined by the demand for the items involved, rather than the standing of the borrower within the college, and that as far as possible the loan period should correspond to the period of use of the item.

The detailed simulation studies undertaken at the University of Lancaster appear to have produced enough data (186,193) for college libraries to employ usefully to increase the availability of their own collections, through judicious experimentation with their service policies. (The University of Lancaster Library in fact offers a simulation computer package which libraries may use to experiment with various loan policies.)

Simulated Availability Studies

As discussed briefly above, the 'failure survey' as a method has been extended to the use of simulated demand as a test mechanism. Any simulated demand study is based on the reasoning that the library ought to be able to provide the documents for which a check is made. The main source of documents used has been citations listed in articles or books. Beckman (143) tested the ability of the University of Waterloo's library to supply items cited in master's and doctoral theses written by members of the university, and the same technique was employed by Chambers and Healey (224) at the University of Rhode Island. Bourne (165) used a similar method, based on references provided by the 'BA Previews' selection dissemination of information service, to test journal article availability at the University of California, Berkeley, and found that items away at binding accounted for 54% of the failure rate (6.5% of the total items sought) - an indication of the effect that binding procedures may have on the availability of recently published articles.

The problem with using a simulated demand approach in relation to tests of C.A.E. libraries is largely that of choosing a relevant sample that might be used as a basis for the test. Citations, which are generally listed as items used by an author in writing his own article or book, are of limited relevance for undergraduate pruposes. Further reading listed in student textbooks might well be suitable in some course areas, although this approach could not be used in courses which have a heavy use of recent primary journal literature. Items recommended by teaching staff would appear to be suitable, but the choice of these is likely to be constrained by what is known to be available in the college library, so that in fact the test would revert to one of whether material actually demanded is available rather than one of whether potentially demanded items are available. The careful use of published checklists and bibliographies could be employed, subject to the limitations mentioned on pages 22-23.

As Baumler and Baumler indicate (138), there is a difference between 'availability' and 'immediate availability'. A user may be satisfied to be able to read a required item within hours, days, or even weeks of searching for the item, depending on the time constraints that affect his need for the item. (It is unlikely, however, that the 'satisfaction' thus gained is ever wholely as great as the satisfaction achieved by immediate availability of an item, though there is no evidence on this point.) This fact has led to an extension of the simple failure survey to take into account the time factor in supply. The Document Delivery Test developed by Orr and his associates (540) basically rates the performance of a library service by the time the library takes to supply a requested document. The test recognises that to a potential user, whether the library owns a copy of the time required, or obtains it from another source, is likely to be immaterial, if the supply time is the same. Orr's method, which has been applied by other investigators (551,733), complies an overall 'library capability index' by weighting each document in relation to its availability by the time it takes the library to supply the item:-

e.g. Weight 1 = Available in less than 10 minutes
Weight 2 = Available in 10 minutes to 2 hours
Weight 3 = Available in 2 hours to 24 hours
Weight 4 = Available in 24 hours to 1 week
Weigth 5 = Available after more than 1 week

The 'capability index' is then worked out as:

$$C.I. = \frac{5 - \text{mean weight of items}}{4} \times 100\%$$

The weights given were calculated as being suitable for the biomedical libraries to which the test was originally applied, and may be varied to suit other circumstances. But, in fact, the weights given seem quite appropriate for an undergraduate situation, in which for a high proportion of items, 'available after more than one week' can indeed be regarded as equivalent to unavailable. The Document Delivery Test produces the same data relating to failure, other than simple reader failure, as other failure surveys, and seems an appropriate mechanism for measuring performance in a college library. (It should be noted, however, that the potential user also has the alternative of attempting to obtain an item himself from an alternative source, and that in many cases, particularly in a metropolitan area in which a college member may have access to several alternative libraries, he may be able to obtain an item faster from elsewhere than is possible for the college library through the inter-library loan service. The strategy followed in an individual case is likely to depend on previous experience, and knowledge of the possiblities.)

Summary

This survey of recent literature relating to collection adequacy from the user viewpoint has convinced us that college librarians have given too little attention to methods of achieving a higher rate of availability of their collections, which may partially offset the need to acquire larger collections. Methods are available which can assist in pinpointing weaknesses in library service procedures which affect collection adequacy, and enough data is now available to make recommendations on procedural changes which may benefit users, although in some

cases costs are simply shifted from those of acquisition to those of staff in reader services - the collection cannot be regarded in isolation.

5. PROVISION AND COSTS

A number of early standards and quantitative recommendations for achieving collection adequacy, particularly those developed in the United Kingdom (e.g. 121,301), tended to specify adequacy in terms of absolute levels of financial provision that should be made for the development of collections. In an era of higher rates of general inflation, such an approach does not seem useful, since these specifications would be out of date almost as soon as they were published. Nevertheless, provision for college libraries, in the final analysis, must be made in terms of dollars and cents, and some mechanism needs to be developed to translate a recommended level of provision in terms of volume of documents into provision in terms of dollars.

Links With General Price Indices

A simple solution might be to link any financial provision developed from average prices of library materials at the time of initial formulation to changes in the consumer price index published by the Australian Bureau of Statistics. Unfortunately, such a simplistic solution would be likely to penalise libraries heavily, if past trends continue. Barr concluded in a detailed study in 1972 (134) that both monograph and serial prices had risen in the United Kingdom and the United States considerably faster than the respective consumer price indexes in those countries, and recently the Library Management Research Unit at the University of Cambridge has investigated (441) the fact that the British university libraries have suffered from application of the overall 'Brown-Tress Index' of university costs to increases in library funds, because library material costs had consistently risen faster than overall university costs. However, the latest information contained in a very recent Working Party report of the University Grants Committee suggests (690) that in terms of costs per page, British book costs since 1972 no longer rose faster than the general rate of inflation.

The report was unable to conclude whether this indicated a real change in the long term trend, or was accounted for by special economic factors over the period 1972-1975. In the case of serials, unit costs continued to rise faster than the retail price index over the whole period considered, 1960-1974, confirming Barr's results, to the extent of a 130% increase even after allowing for the general increase in the retail price index.

No similar overall study appears to have been conducted comparing the rate of inflation of Australian published materials with general cost of living increases. However, Alison's studies of the average cost of serials published in Australia showed (1,2) that from 1963 to 1975 titles increased in price, on average, by 112.7%. This compares with a consumer price index increase over the same period of 100.6%. Similarly, an examination of the statistics published in the February issues of 'Australian Bookseller and Publisher' shows an increase in the average price of commercially published books in Australia from the latter half of 1971 to the latter half of 1975 of 88% compared with an increase in the consumer price index during that period of approximately 54%. The indices used by the Commission on Advanced Education in the provision of supplementation grants to C.A.E.'s show (24:218-9) an estimated increase over the period December 1970 to December 1975 (a period one year longer) of 71.5% for capital costs and about 76% for recurrent costs. Thus it appears that the use of any general cost indices for translating acquisition volumes into finanical terms is likely to lead to a relative decline in the annual acquisition programmes of college libraries, if libraries are not to consume an increasing proportion of college budgets.

Links With Publications Price Indices

The picture is complicated by the fact that a high proportion of library materials bought by C.A.E. libraries are acquired from overseas, and therefore changes in financial provision need to take into account differing rates of inflation in the main supplying countries, notably the United Kingdom and the United States. Detailed statistics relating to the price

inflation of books and serial titles are published in both countries:-

U.K. Books - in 'The Bookseller' and 'Library Association Record'

U.K. Serials - in 'Library Association Record'

U.S. Books - in 'Publishers Weekly'

U.S. Serials - in 'Library Journal'

Linking financial provision to a weighted average of the Australian, U.K. and U.S. indices would probably produce an index more useful than any single index based on general cost increases. However, examination of the statistics from the U.K. and U.S. sources, and from Alison's studies (1,2), show wide variations in the rate of price increases from subject to subject and for different kinds of material. Since the subject and level of material acquired by C.A.E. libraries is biased towards technological and applied studies documents suitable for undergraduate teaching and learning, it seems unlikely that any general index would be suitable for use by all college libraries. It is even more unlikely that the actual average price of monographs and serials acquired by C.A.E. libraries will be closely related to overall average prices of books and serials produced in the supplying countries, since C.A.E. acquisition is a heavily biased subset of total production of library materials. Information supplied by one major C.A.E. library suggests that the average price paid for Australian commercially-produced books acquired by C.A.E. libraries is at least 10% higher than the average price of all such books produced in Australia. This is because many lower-priced items (e.g. children's fiction) are not of a level suitable for academic libraries.

Exchange Rate Fluctuations and Actual Prices Paid

Since a high proportion of college library acquisitions are obtained from overseas sources, the average price paid by college libraries is highly subject to fluctuations in the exchange rate. Cost details provided by one major C.A.E. library, for example, indicate that the average price paid for monographs actually fell by 9% from 1973 to 1974 when the United Kingdom devalued its currency and Australia revalued,

but then rose sharply by 25% from 1974 to 1975 when the Australian dollar declined in value against the United States dollar. This pattern occurred even though all three countries mentioned had considerable rates of inflation during the period concerned.

It is for these reasons that various writers have concluded (125,234) that the only valid way of projecting cost trends for monographs and serials, based on the volume of material required, is for each institution to develop costs from the actual prices paid by its library from year to year. This enables individual variations to be accounted for, without entering into the complex calculations necessary to deal with exchange rate fluctuations. It should be noted, however, that this method suffers from two disadvantages:-

(a) Past trends are no necessary guide to what will happen in the future. Thus necessary adjustments will always be one year behind. This does not necessarily invalidate the technique, since over the longer term adjustments will balance out, and fluctuations may be minimised if trends are projected on the basis of changes in, say, a rolling three-year average price, rather than simply changes from year to year.

(b) More seriously, as the Cambridge Library Management Research Unit has pointed out (441), actual average prices paid for monographs and serials in a college are not the same as desirable prices paid. If a college library is faced with cost pressures, one strategy likely to be followed is to reduce the number of purchases of expensive items to a greater extent than for cheaper items. (It should be noted in passing, that Newhouse has recommended (526:9) that the exact opposite procedure should operate. As Barnes (12:37) and Freyberg (299:155) have stressed, if the price of books and journals is rising faster than the consumer price index there will be less tendency for students and staff to buy their own copies, and pressure on lecturers not to recommend more expensive items. Thus

the library has a greater likelihood of being the only realistic source of more expensive items.) This strategy leads to a lower allocation of funds for the following year, when further expensive items are foregone, and so on, in a continuing cycle. A modest extra increase in provision, after allowing for inflation, of say 1% of the total sum provided for materials each year, would seem to be a means of averting this possibility.

If local cost data is to be applied when making financial provision for library collections it will be essential for individual college libraries to have clear accounting data related to their average material costs from year to year. Fortunately, there now exists a clear standard for the construction of price indices for library materials (96) and this standard should be followed for annual data to be truly comparable.

6. METHODOLOGY

The evaluation of library collections and services has received a great amount of attention in recent years, to the extent that there have been published several reviews of the methods that have been used to make evaluations. From the most useful of these, those by Evans, et al. (287), Orr (543), Bonn (156) and Stecher (68), and from the primary literature already described, the methods that have been employed appear to fall into two groups:-

(1) Techniques for studies of potential library users.
   (a) Interviews, to determine in some depth needs and opinion of existing and potential services. Interviews may be structured or unstructured.
   (b) Questionnaires, completed by users to describe their information-seeking behaviour, giving similar information to that determined in interviews, but usually in less depth.
   (c) Diary techniques, in which users record their actual information-seeking or library use behaviour.
   (d) 'Critical incident' techniques which focus in detail on particular examples of users' experience,

which are then used to generalise about overall information-seeking experience.

(e) Direct observation of users in a library or other information-seeking environment.

(f) Failure surveys, as described on pages 66-69.

(2) Techniques for collection evaluation.

(a) Opinion surveys of users, eliciting their subjective evaluation of the collection.

(b) Use of checklists.

(c) Document Delivery Tests.

(d) Failure surveys.

(e) Analysis of circulation and inter-library loan records.

(f) Analysis of reference enquiry success rates.

(g) Comparison of library statistics from various institutions.

(h) Comparison of library holdings/acquisitions with the extent and range of materials known to be published.

Most of the user study techniques are those typically employed in investigations in the social science area and do not need to be reviewed here. Line's monograph on library surveys (448) provides a useful introduction. The collection evaluation techniques have been described earlier in this literature review. However, it is apparent that there is available a substantial battery of possible techniques applicable to the investigation of collection adequacy in C.A.E. libraries.

Nevertheless, the review of previous work in this field has confirmed the initial opinion of the investigating team that no single technique may be regarded as adequate for complete evaluation purposes, nor does the whole range of techniques available provide any certainty of arriving at measures of collection adequacy which may be asserted irrefutably. The complexity of the potential user - document relationship is not susceptible to complete modelling with present techniques, and subjective assessments of an individual library situation are always likely to remain relevant. However, the literature

does suggest that measures and guidelines may be arrived at, which are of general applicability and acceptability, and provide a basis for planning. The empirical work we have carried out has been based on this conclusion.

II. BIBLIOGRAPHY

A very large body of literature was examined during the progress of this project. Many of the items were of limited value in relation to our purposes and have been excluded from this bibliography, which therefore contains only those items which we consider both relevant and useful in relation to collection development in college libraries. We have been particularly sparing in our inclusion of material on library use studies, and on patterns of literature use, as extensive bibliographies, listed among our sources below, cover these topics in detail.

The bibliography has been divided into three sections. Section A lists bibliographical sources, Section B covers material relating specifically to the Australian context, and Section C relates to relevant studies carried out overseas. This is because we feel it may be useful to readers to have the small range of Australian material grouped together.

Many of the items listed are relatively difficult to obtain in Australia, except through the E.R.I.C. documentation system. Where documents are known to be included in the E.R.I.C. collection, their 'ED' number has been included, and the items concerned may be obtained from the National Library of Australia or one of the other libraries holding complete files of E.R.I.C. documents. In the case of North American theses, the Xerox University Microfilms order number is given where known.

A. SOURCES

A full literature search was conducted using the following serial bibliographical sources:-

A. American Doctoral Dissertations

B. Annual Review of Information Science and Technology

C. Dissertation Abstracts/Dissertation Abstracts International

D. Index to Theses Accepted for Higher Degrees by the Universities of Great Britain and Ireland, and the Council for National Academic Awards

E. Information Science Abstracts

F. Library Association. Library and Information Bulletin

G. Library Literature

H. Library Science Abstracts/Library and Information Science Abstracts

I. Research in Education/Resources in Education (ERIC)

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B. AUSTRALIAN STUDIES

Many of the references below, particularly the reports of the Commission on Advanced Education and other government instrumentalities, contain significant amounts of statistical information relating to Colleges of Advanced Education and their libraries.

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APPENDIX 1

OUTLINE OF SOME QUANTITATIVE STANDARDS

SUGGESTED FOR COLLEGE LIBRARY COLLECTIONS

A. AUSTRALIAN STANDARDS

AUSTRALIAN COMMISION ON ADVANCED EDUCATION

Standards for Monodisciplinary Colleges of Advanced Education (1972)

Apply to single-discipline Colleges of Advanced Education. This excludes teachers colleges and colleges of therapy, to which the 1969 standards for multi-disciplinary colleges are to apply.

The library should own the following numbers of volumes:-

	Basic Collection
Category X. Colleges of argriculture, horticulture and forestry, conservatoria of music, colleges of art, geographically isolated country colleges	
With less than 100 EFT students	5,000 volumes and 100 periodical titles
With 100-299 EFT students	10,000 volumes and 200 periodical titles
With 300 or more EFT students	15,000 volumes and 200 periodical titles
Category Y. Colleges of nursing and pharmacy.	
With less than 300 EFT students	7,500 volumes
With 300 or more EFT students	12,000 volumes

Notes: (1) In the calculation of EFT, one full-time student is considered as equivalent to two part-time or external students.

(2) The standards exclude provision for audio-visual materials.

Source: Australian Commission on Advanced Education. Third Report on Advanced Education. Canberra, A.G.P.S., 1972, p. 59.

COMMITTEE ON TECHNICAL AND FURTHER EDUCATION

Interim Guidelines for Library Resource Centres in Technical Colleges (1974)

Apply to Australian technical and further education colleges providing vocationally-oriented courses at the subtertiary level.

The library should own by 1981:-

	Basic Collection
a) Bookstock	
In colleges with less than 1000 student enrolments and without staffed libraries	5 volumes per student
In colleges with less than 2000 individual student enrolments	10,000 volumes
In colleges with 2,000 - 5,000 individual student enrolments	25,000 volumes
In colleges with 5,000 - 10,000 individual student enrolments	50,000 volumes
In colleges with more than 10,000 individual student enrolments	50,000 volumes plus 5,000 volumes for every additional 1000 individual student enrolments over 10,000
All allowances to include at least 1,000 volumes of reference books.	
b) Current Serial Subscriptions	
In colleges with less than 10,000 individual student enrolments	100 subscriptions minimum or 10 subscriptions for every 100 individual student enrolments
In colleges with more than 10,000 individual student enrolments	1000 subscriptions plus 5 subscriptions for every additional student enrolment over 10,000

Notes: (1) Bookstock is to include only 'currently effective bookstock' - which is not defined.

(2) The standards exclude provision for audio-visual materials.

Source: Australian Committee on Technical and Further Education. TAFE in Australia. Report on Needs in Technical and Further Education. Volume 2. Canberra, A.G.P.S., 1974. p.240-243.

COMMONWEALTH ADVISORY COMMITTEE ON ADVANCED EDUCATION

Standards for Libraries of Multidisciplinary Colleges of Advanced Education (1969)

Apply to multidisciplinary Colleges of Advanced Education of all sizes. Exclude colleges of agriculture, horticulture and forestry, conservatoria of music, colleges of art, colleges of nursing, and colleges of pharmacy. Have since been taken to incl teachers colleges.

The library should acheive the following collection size, within 'a relatively short space of time':-

		Basic Collection
Category 1.	Colleges with less than 600 EFT students	25,000 volumes, including 200 current periodical titles
Category 2.	Colleges with 600-999 EFT students	50,000 volumes, including 200-700 current periodica titles
Category 3.	Colleges with 1000-1999 EFT students	80,000 volumes, including 700-1000 current periodical titles
Category 4.	Colleges with 2000-3499 EFT students	100,000 volumes, includin 1000-2000 current periodical tit es
Category 5.	Colleges with 3500 or more EFT students	150,000 volume , includin 3000 current periodica titles

Notes:

(1) In the calculation of EFT, one full-time student was considered as equivalent to three part-time students. This calculation has been amended by later reports, so that one full-time student is now considered as equivalent to two part-time or external students.

(2) Current periodical titles are taken to include only those on subscription.

(3) The standards are not clear as to whether provision for audio-visual materials is additional to or included in the above requirements.

Source: Commonwealth Advisory Committee on Advanced Education. Second Report. Canberra, Government Printer, 1969. p. 61-62.

CORNELIUS, H.F.

Non-Book Materials - Basic Stock (1971)

Apply to libraries of Australian Universities teaching in ten major subject fields but excluding facilities for teacher training.

The library should acquire the following basic collection over the period of one triennium:-

	Basic Collection
Maps	25,000 sheets
Atlases	150 titles
Globes, Relief maps, Wall maps, Street directories	Unspecified number, costing $1,500
Sound Recordings (English and Music)	3,000 titles
Sound Recordings (2 foreign languages)	2,000 titles
16 mm Moving Films	500 titles
8 mm Moving Films	300 titles
8 mm Film Loops	1,000 items
Slides	15,000 items
Film Strips	2,000 titles
Overhead Transparencies	100 sets
Pictures	500 sets plus 2,000 individual items
Videotapes	Unspecified number cosing $25,000
Multimedia Kits	100 items
Microforms	Unspecified number costing $74,000

Plus annual additions totalling 18-20% of the library annual acquisitions budget, but not less than $56,000 p.a.

Source: Cornelius, H.F. Non-Book Materials and Australian University Libraries. Australian Library Journal, 20 (9), October 1971. p. 20-26.

Draft Standards for Libraries of Colleges of Advanced Education (1972)

Apply to all Colleges of Advanced Education.

The library should own the following number of volumes:-

A. Multidisciplinary colleges

1. Basic collection	65,000 monograph volumes, plus 10,000 serial volumes
2. Plus for each scientific or technological field studied	1,000 volumes
3. Plus for each humanities or applied arts field studied	1,500 volumes
4. Plus for each student (full-time or part-time)	40 volumes
5. Plus for each lecturer	100 volumes
6. Plus annual growth rate of 5% of number of volumes resulting from the application of provisions 1-5.	

B. Monodisciplinary colleges

1. Basic collection	30,000 volumes
2. Plus for each student	40 volumes
3. Plus for each lecturer	100 volumes
4. Plus annual growth rate of 5% of number of volumes resulting from the application of provision 1-3.	

Note: The formula specifically excludes provision for audio-visual materials. This provision is stated separately, in some detail (see next page).

Non-Book Materials Standards	Basic Collection	Annual Additions
1. 16 mm Moving Films	50 per subject field of study	6
2. 8 mm Moving Films (cartridge and loop)	200 per subject field of study	60
3. Maps	100 mounted wall maps, plus 3 or 4 major Australian topographical series, plus 15,000 map-sheets where geography and geology are taught	10 wall maps, plus 1500 map sheets where geography and geology are taught
4. Pictures (Art works and Photographs)	200, plus 3000 where history of art is taught	300 where history of art is taught
5. Slides	10,000 plus 2,000 per major subject field taught	500 per major field taught, plus 1000 if history of art is taught
6. Filmstrips	1,000	100
7. Sound Recordings	3,000, plus 2,000 if music is taught, plus 1,000 for for each foreign language taught	300, plus 250 if music is taught, plus 100 for each foreign language taught
8. Multimedia Kits	50 per major subject field of study	5

Source: Library Association of Australia. University and College Libraries Section. Draft Standards for Libraries of Colleges of Advanced Education. 1972. p. 4, 6A, 6B.

TAYLOR, T.K.

Recommended Standards for Australian Teachers College Libraries (1971)

Apply to institutions offering coures in primary or secondary teacher education up to the level of Diploma of Education.

The library should own:-

1.	Basic collection	25,000 volumes
2.	Plus for each 'nominal' student (over 416)	60 volumes
3.	Plus for each major field of specialisation	2,000 volumes
4.	Plus for each minor subject field	500 volumes
5.	Plus for each minor optional topic	100 volumes
6.	Plus annual growth rate of 10% of the total number of volumes resulting from provisions 1-5.	

Notes: (1) The 'nominal' student roll is defined as the student enrolment times the proportion by which the annual circulation exceeds 20 loans per student.

(2) Audio-visual materials are to be provided for at a rate of an extra 10% of the volumes resulting from the above formula. Is is unclear how this 10% is to be counted in terms of the number of audio-visual items.

(3) The formula excludes provision for teaching aids used by college lecturers.

Source: Taylor, T.K. Progress and Poverty in Teachers College Libraries, in Library Association of Australia. Proceedings of the 16th Biennial Conference, Sydney, August 1971. Sydney, L.A.A., 1972, p. 446-451.

VICTORIA. EDUCATION DEPARTMENT. ADVISORY COMMITTEE ON TEACHERS COLLEGE LIBRARIES

Recommendations on Resources (1972)

Apply to teachers colleges in the State of Victoria, offering courses in primary and/or secondary teacher education up to the level of Diploma of Education.

The Library should contain, within one triennium, the following minimum amounts of currently effective bookstock and periodical subscriptions:-

(a)	Reference Collection	1000 volumes
(b)	For colleges with a student population of 600 to 1000	50,000 volumes plus 250 to 500 current serial subscriptions
(c)	For colleges with a student population of 1000 to 2000	80,000 volumes plus 500 to 1000 current serial subscriptions
(d)	Plus non-book media	Unspecified quantity
(e)	Plus annual replacements of obsolescent material at rate of approximately 10%, per annum	

Notes: (1) No definition is given of how 'student population' is calculated, but comments in other sections of the report suggest that EFT student is meant.

(2) 'Currently effective stock' is defined as books not more than ten years old.

Source: Victoria. Education Department. Advisory Committee on Teachers College Libraries. Final Report. Melbourne, December 1972. p. 15.

VICTORIA INSTITUTE OF COLLEGES

Standards for Multidisciplinary Colleges of Advanced Education (1971)

Apply to multidisciplinary Colleges of Advanced Education within the Victoria Institute of Colleges.

The library should own:-

1.	Basic collection	50,000 volumes
2.	Plus further volumes depending on the number of subjects taught and number of students served	Unspecified quantity

Source: Victoria Institute of Colleges. Libraries in Colleges of Advanced Education: A Brief Guide to Their Administration and Function for the Use of Colleges and Institutes Affiliated with the Victoria Institute of Colleges. Melbourne, V.I.C., 1971. p. 13.

B. BRITISH STANDARDS

ASSOCIATION OF TEACHERS IN COLLEGES OF EDUCATION AND DEPARTMENTS OF EDUCATION/ LIBRARY ASSOCIATION

College of Education Libraries: Recommended Standards (1967)

Apply to teachers colleges offering three-year teaching diplomas, four-year Bachelor of Education degrees, and one-year postgraduate courses in education.

The library should provide the following number of volumes of currently effective stock:-

1.	Basic Collection for colleges with up to 500 students	39,600 volumes including 200 current periodical titles
	For colleges with 501-750 students	54,750 volumes
	For colleges with 751-1000 students	70,250 volumes
2.	Plus annual growth rate for colleges with up to 500 students	7.5 volumes/student
	For colleges with over 500 students	6.0 volumes/student

Notes:
(1) Provision for audio-visual materials is specifically excluded from the above figures. Recommendations are a basic collection of 10,000 picutres, charts and maps, and 3,000 other audio-visual items.
(2) All students are considered to be full-time.
(3) Extra provision (unquantified) is to be made for colleges with postgraduate courses.
(4) 'Currently effective stock' is not defined.

Source: Association of Teachers in Colleges of Education and Departments of Education and Library Association. College of Education Libraries: Recommended Standards for their Development. London, A.T.C.E.D.E., 1967. p. 7-9.

Standards for Polytechnic Libraries (1968)

Apply to multidisciplinary institutions offering mainly two-year sub-degree and three-year bachelor's degree programmes, together with some postgraduate diploma and master's courses. Colleges are expected to have at least 2,000 FTE students.

The library should own:-

1. Basic Collection	150,000 volumes including 3,000 periodical titles
2. Plus duplicates	Unspecified number

Note: Standards are unclear as to whether the basic collection includes provision for audio-visual materials.

Source: Library Association. Libraries in the New Polytechnics - a Guide to Planning Requirements. Library Association Record, 70 (9), September 1968. p. 241.

College Libraries: Recommended Standards (1971)

Apply to colleges of technology and other colleges of further education offering programmes of one, two or three years of post-secondary education up to bachelor's degree level, but mainly of sub-degree level.

The library should own:-

1. Basic Collection (if no degree work)	10,000 titles
(with some degree work)	25,000 titles
2. Plus duplicates	Unspecified number
3. Plus periodical titles (with some degree work)	Minimum 600 titles

Notes: (1) Audio-visual materials are to be separately provided for.

(2) These standards represent an updating of standards originally proposed for such colleges in 1959.

Source: Library Association. College Libraries: Recommended Standards of Library Provision in Colleges of Technology and Other Establishments of Further Education. London, Library Association, 2nd ed. 1971. p. 9-10.

UNIVERSITY GRANTS COMMITTEE

Standard for University Libraries (1967)

Apply to a 'standard' established university offering bachelor's degrees, postgraduate courses and research degrees up to the doctoral level, containing 3000 undergraduate students, 1000 research students and 500 teaching staff.

The library should own:-

Basic collection	500,000 volumes
Plus annual acquisition	16,000 volumes
Plus periodicals	3,000 current periodical subscriptions (equals 4,000 volumes p.a.)

Source: University Grants Committee. Report of the Committee on Libraries. London, H. M. S. O., 1967. p. 267.

CANADIAN ASSOCIATION OF COLLEGE AND UNIVERSITY LIBRARIES

Standards for Community College Libraries (1973)

Apply to a wide range of institutions, including colleges of agriculture, Quebec Cegep's, Ontario colleges of applied arts and technology, religious colleges, community colleges, junior colleges, regional colleges and institutes of technology, all offering two years of post-secondary undergraduate programmes.

The library should own:-

1. Basic collection	40,000 bibliographic units, including 600 current periodical titles
2. Plus for every 200 FTE students beyond 1000 FTE	5,000 bibliographic units

Note: A 'bibliographic unit' is defined as any print or non-print item, or group of items, requiring a separate and distinct catalogue entry.

Source: Canadian Association of College and University Libraries. Standards Recommended for Canadian Community College Libraries. Ottawa, Canadian Library Association, 1973. p. 7.

Canadian University Library Standards (1967)

Apply to universities and colleges offering at least bachelor's and master's degree programmes.

The library should own:-

A. Monographs

1. Basic collection	100,000 volumes
2. Plus for each graduate student	200 volumes

The total resulting from provisions 1 and 2 should not result in less than 75 volumes per student, in which case such a provision is to apply.

B. Periodical Titles

Institutions with up to 1000 students	1000 titles
with 1001-2000 students	1500 titles
with 2001-3000 students	2100 titles
with 3001-4000 students	2600 titles
with 4001-5000 students	3100 titles
with 5001-6000 students	3600 titles
with 6001-7000 students	4100 titles
with 7001-8000 students	4600 titles
with 8001-9000 students	5100 titles
with 9001-10,000 students	5600 titles
with 10,001-11,000 students	6200 titles
with 11,001-12,000 students	6700 titles
with 12,001-13,000 students	7250 titles

Note: The standards are not clear as to whether provisions for audio-visual materials is additional to or included in the above requirements.

Source: Canadian Association of College and University Libraries. University Library Standards Committee. Guide to Canadian University Library Standards: Report, 1961-1964, with Statistical Appendices, 1963-1966. Ottawa, Canadian Library Association, 1967. p. 13-21.

NEW ZEALAND LIBRARY ASSOCIATION

Standards for Libraries in Technical Institutes (1973)

Apply to multi-disciplinary technical institutions offering instruction and vocational education from trade to professional level.

The library should own:-

1.	Basic Collection	5,000 volumes and 40 current periodical titles
2.	Plus for every 100 FTE students beyond 200 FTE	1,500 volumes and 16 current periodical titles

3. Plus annual growth rate of 5-8% of total calculated from provisions 1 and 2.

Note: Standards appear to exclude provision for microforms, and audio-visual materials.

Source: New Zealand Library Association. Standards for Libraries in Technical Institutes. Wellington, N.Z.L.A., 1973. p. 3-5.

Standards for Teachers College Libraries (1967)

Apply to teachers colleges offering two and three year undergraduate programmes in education, based on an enrolment of 1000 full-time students.

The library should own:-

1.	Basic Collection	50,000 volumes and 200 current periodical titles

2. Plus annual growth rate of 4-5% of total basic collection.

Note: Specifically excludes provision for audio-visual materials.

Source: New Zealand Library Association. Standards for Teachers College Libraries. Wellington, N.Z.L.A., 1967. p. 14-18.

E. UNITED STATES STANDARDS

ADVISORY COMMITTEE ON PLANNING FOR THE ACADEMIC LIBRARIES OF NEW YORK STATE

Guidelines for New York State Academic Library Collections (1973)

Apply to all state academic institutions offering post high school programmes of study in New York State, including two-year colleges, both general and specialised four-year colleges, and universities.

The Library should have on-site the following number of units of library resources:-

A.	**Two-Year Colleges**	
1.	Basic Collection	28,000 units
2.	Plus for each FTE student	5 units
3.	Plus for each FTE faculty member	50 units
4.	Plus for each major or minor field of study	165 units
B.	**Four-Year Colleges and Universities**	
1.	Basic Collection	85,000 units
2.	Plus for each FTE student	15 units
3.	Plus for each FTE faculty member	100 units
4.	Plus for each undergraduate major or minor field of study	335 units
5.	Plus for each Master's field, where no Doctorate is also offered	6,100 units
6.	Plus for each Master's field, where a Doctorate is also offered	3,050 units
7.	Plus for each Doctoral field	24,500 units

Libraries able to provide 100% or more than the volumes called for by the formulae are graded A, those providing 80-99% are graded B, 55-79% are graded C, 40-54% are graded D, and less than 40% are graded E.

Notes: (1) A 'unit of library resources' is defined as one physical unit of any printed or written work, one reel of microfilm, eight microcards, eight sheets of microfiche, four sheets of microprint or one-seventh of a sheet of ultrafiche, all of which are to have been catalogued, classified and/or made ready for use.

(2) The formulae specifically exclude provision for non-book materials (other than microforms), which is regarded as additional to the above requirements.

Source: Kaser, D. ed. Report of the Advisory Committee on Planning for the Academic Libraries of New York State. Albany, N. Y., New York State Educational Department, Division of Library Development, 1973. p. 19-22.

ASSOCIATION OF COLLEGE AND RESEARCH LIBRARIES

Standards for College Libraries (1959)

Apply to multidisciplinary institutions offering mainly four-year undergraduate programmes, and which may offer master's degree programmes. The institutions may be variously called colleges or universities, but do not include junior colleges or institutions emphasising advanced research.

The library should own the following number of volumes organized for use:-

1. Basic Collection	50,000 volumes
2. Plus for every 200 students beyond 600	10,000 volumes

Notes: (1) The formula includes both monograph and serial volumes, but specifically excludes provision for audio-visual material.

(2) Part-time and external students are equated with full-time students.

(3) 'Organized for use' is taken to exclude items which are not catalogued or listed so as to be accessible by readers.

Source: Association of College and Research Libraries. Committee on Standards. Standards for College Libraries. College and Research Libraries, 20 (9), July 1959. p. 274-280.

Standards for Junior College Libraries (1960)

Apply to colleges offering two-year programmes of study above high-school level, either as terminal programmes or as preliminary studies prior to entering bachelor's courses in other colleges or universities. The colleges are variously called two-year colleges, junior colleges and community colleges.

The library should own the following number of volumes:-

1. Basic Collection	20,000 volumes, excluding duplicates and textbooks
2. Plus for every 500 FTE students beyond 1000 FTE	5,000 volumes

Note: The standards are not clear as to whether provision for audio-visual materials is additional to or included in the above requirements.

Source: Association of College and Research Libraries. Committee on Standards. Standards for Junior College Libraries. College and Research Libraries, 21 (3), May 1960. p. 200-206.

Standards for College Libraries (1975)

Apply to multidisciplinary institutions offering at least four-year bachelor's degree programmes, and which may offer master's degree programmes and grant up to ten individual doctoral degrees per year. The institutions may be variously called liberal arts colleges, colleges and universities, but do not include two-year colleges, larger universities, independent professional schools, or specialised programmes.

The library should be able to provide prompt access (i.e. within fifteen minutes) to the following number of relevant print-volumes (including microform volume-equivalents):-

1.	Basic Collection	85,000 volumes
2.	Plus for each FTE student (undergraduate or graduate)	15 volumes
3.	Plus for each FTE faculty member	100 volumes
4.	Plus for each undergraduate major or minor field studied	350 volumes
5.	Plus for each Master's field (where no higher degree in the field is offered)	6,000 volumes
6.	Plus for each Master's field (where a higher degree in the field is also offered)	3,000 volumes
7.	Plus for each 6th-year specialist degree field	6,000 volumes
8.	Plus for each field in which a Doctorate is offered	25,000 volumes
9.	Plus annual growth rate of at least 5% of the total obtained as a result of provisions 1-8, before withdrawals.	

Libraries able to provide 100% or more than the volumes called for by the formula are graded A, those providing 80-99% are graded B, 65-79% are graded C, and 50-64% are graded D.

Notes: (1) The Master's field allowance refers to one-year Master's courses equivalent to the post-graduate or graduate diploma in the C.A.E. situation, while the 6th-year specialist degree corresponds to the Master's in C.A.E.'s, which requires two years post-graduate study.

(2) The formula refers only to print (or print equivalent) materials. No quantitative recommendations are made for audio-visual materials, such provision being in addition to the above requirements.

(3) A list of defined 'fields of study' is appended to the standards.

Source: Association of College and Research Libraries. Standards for College Libraries. College and Research Libraries News, (9), October 1975. p. 278-279, 290.

CALIFORNIA STATE COLLEGES. OFFICE OF THE CHANCELLOR. DIVISION OF ACADEMIC PLANNING

Goals for the Development of California State College Libraries (1970)

Apply to colleges within the California State system. These are institutions offering mainly four-year bachelor's degree progammes, together with a number of master's programmes (i.e. one-year post-graduate programmes), and a few doctoral degrees offered in conjunction with universities outside the system.

The library should own the following number of volumes:-

1.	Basic Collection	75,000 volumes
2.	Plus for each 200 FTE students beyond 600 FTE	10,000 volumes
3.	Plus for each subject field of graduate study	3,000 volumes
4.	Plus for each joint doctoral field	5,000 volumes

5. Less 5% of total computed from provisions 1-4, if the college is situated less than 25 miles from another public higher education institution containing at least 325,000 volumes in its library.

6. Plus annual growth rate of 5% of the number of volumes resulting from the application of provisions 1-6.

Notes: (1) The following categories of publication are specifically excluded from the count of volumes - Federal and State government documents, school textbooks used in teacher education programmes, microforms, telephone directories, annual company reports, pamphlets, theses, archival material. Two per cent of theoretical holdings are to be subtracted each year to allow for weeding and losses, before additions to bring the library up to standard are calculated.

(2) No mention is made of non-book materials, which are assumed to be excluded from the formula above.

Source: Report on the Development of the California State College Libraries: A Study of Book, Staffing and Budgeting Problems. Los Angeles, California State Colleges Office of the Chancellor, Division of Academic Planning, November 1970, p. 45-47.

CALIFORNIA STATE UNIVERSITY AND COLLEGES. COUNCIL OF LIBRARY RESOURCES. LEARNING RESOURCES COMMITTEE

Guidelines for Learning Resources (1975)

Apply to four-year colleges and universities within the California State system, which all offer bachelor's degree programmes, most offer master's degree programmes, and a few selected doctoral programmes in conjunction with the University of California.

The following basic minimum core collection should be owned by college and university libraries as "initial ventures into the provision of nonprint collections at the academic level".

	Basic Collection
Audiorecordings (in "whatever format is most suitable")	8,000-10,000 items, or 1-2 items per user, whichever is greater
Slides	40,000 individual items
Projected Moving Films and Videotapes	6,000 items in 16 mm film or videotape format, with a relatively small proportion in 8 mm format
Multi-media	Unspecified amount
Games and Simulations	Unspecified amount
Pictures and Prints	Unspecified amount

Source: California State University and Colleges. Council of Library Directors. Learning Resources Committee. Guidelines for Learning Resources in the Libraries of the California State University and Colleges System. Draft. Los Angeles, California State University and Colleges. Office of the Chancellor, July 1975. p. 8-10.

CARRISON, D.K.

Recommended Allocations for Minnesota State College Libraries (1974)

Apply to multidisciplinary colleges offering mainly bachelor's and master's degree programmes, with a very limited number of post-master's and doctoral programmes.

The library should own the following number of volumes:-

1. Basic Collection	100,000 volumes
2. Plus for each FTE Lower Division (1st/2nd year) student	15 volumes
3. Plus for each FTE Upper Division (3rd/4th year) and graduate student	25 volumes
4. Plus for each Master's field of study (where no higher degree is also offered)	7,500 volumes
5. Plus for each sixth-year field of study (where no doctoral degree is also offered)	11,100 volumes
6. Plus for each doctoral field of study	24,500 volumes

Note: The standards specifically include audio-visual media in the recommended levels of provision. Audio-visual items are to be calculated as volume-equivalents, in terms of physical units.

Source: Carrison, D. K. ed. A Media Resources and Services Budgetary Analysis and Allocation System for the Minnesota State College System. May 1974. p. 1-

CLAPP, V.W. AND JORDAN, R.T.

Quantitative Criteria for Academic Library Collections (1965)

Apply to United States colleges and universities, based on earlier recommendations for state-supported colleges and universities in Ohio, offering courses from two-year undergraduate to doctoral level.

The library should own the following number of volumes:-

	Monographs	Periodicals
A. Two-Year Colleges		
1. Basic Collection	15,000 volumes including 12,500 titles	1,875 volumes including 125 current titles
2. Plus for each FTE student	4 volumes	1 volume
3. Plus for each FTE faculty member	36 volumes including 30 titles	15 volumes including 1 current title
4. Plus for each subject field of study	120 volumes including 100 titles	45 volumes including 3 titles
B. Four-Year Colleges and Universities		
1. Basic Collection	47,000 volumes including 40,000 titles	3,750 volumes including 250 current titles
2. Plus for each FTE student	11 volumes	1 volume
3. Plus for each student on honours or independent study programmes	12 volumes including 10 titles	---
4. Plus for each FTE faculty member	85 volumes including 75 titles	15 volumes including 1 current title
5. Plus for each major undergraduate field of study	290 volumes including 250 titles	45 volumes including 3 current titles
6. Plus for each Master's field of study	2,900 volumes including 2,500 titles	150 volumes including 10 current titles
7. Plus for each doctoral field of study	23,000 volumes including 20,000 titles	1,500 volumes including 100 current titles

Notes: (1) Microforms to be counted as if they were hard copy originals

(2) Excludes provision for audio-visual materials.

Source: Clapp, V. W. and Jordan, R. T. Quantitative Criteria for Adequacy of Academic Library Collections. College and Research Libraries, 26 (5), September 1965. p. 373-377.

INTERINSTITUTIONAL COMMITTEE OF BUSINESS OFFICERS

Model Budget Analysis System for Washington State University and College Libraries (1970)

Apply to the colleges and universities within the Washington State system. These all offer at least four-year bachelor's degree and master's degree programmes.

The library should own the following number of units of library resources:-

1.	Basic Collection	85,000 units
2.	Plus for each FTE student	15 units
3.	Plus for each FTE faculty member	100 units
4.	Plus for each Master's field of study (in which no doctorate is also offered)	6,100 units
5.	Plus for each Master's field of study (for which the doctorate is also offered)	3,050 units
6.	Plus for each doctoral field of study	24,500 units
7.	Plus an annual growth of 5% of the total number of units resulting from the application of provisions 1-6	

Notes: (1) A 'unit of library resources' is defined as a physical unit of any printed or written document, one reel of microfilm, eight microcards, or eight microfiche, catalogued, classified and/or otherwise prepared for use.

(2) The formula specifically excludes unbound government documents, college and university handbooks, individual maps, other audio-visual materials, telephone directories and trade catalogues. It also excludes provision for law, medicine and agriculture, institutional archives, and model school curricula collections.

(3) The formula was modified in 1973 to include an extra growth entitlement based on the five year moving average of the 'Bowker Annual' times the 5% currency factor (private communication).

Source: Interinstitutional Committee of Business Officers. A Model Budget Analysis System for Program 05 Libraries. Olympia, Washington, I.C.B.O., March 1970. p. 1-6.

SPYERS-DURAN, P.

Quantitative Standards for Nebraska State College Libraries (1973)

Apply to multidisciplinary colleges offering four-year bachelor's degree and master's degree programmes.

The library should hold the following number of units of library resources:-

1.	Basic Collection	85,000 units
2.	Plus for each FTE Lower Division (1st/2nd year) student	15 units
3.	Plus for each FTE Upper Division (3rd/4th year) student	20 units
4.	Plus for each graduate student	75 units
5.	Plus for each graduate field of study	7,500 units
6.	Plus annual growth of 7.5% of the total number of units resulting from the application of provisions 1-5.	

Notes: (1) The formula specifically excludes provision for audio-visual materials, which are to be provided for to the extent that may be purchased by an extra 10% of the budget required to provide the volumes as calculated above.

(2) A 'unit of library resources' is defined as a physical unit of any printed or written document, one reel of microfilm, eight microcards, or eight microfiche, catalogued, classified and/or otherwise prepared for use.

Source: Spyers-Duran, P. Proposed Model Budget Analysis System and Quantitative Standards for the Libraries of the Nebraska State Colleges. Lincoln, Nebraska State College Libraries, 1973. p. 3-5.

APPENDIX 2

APPLICATION OF RECOMMENDED COLLECTION FORMULAE TO FIVE SELECTED COLLEGE OF ADVANCED EDUCATION LIBRARIES IN 1975

The five colleges for which examples have been calculated were selected to illustrate the results of applying the formulae developed to colleges varying considerably in size and range of courses.

The comparisons with the actual collection sizes in the colleges as at the end of 1975 need to be considered only as an approximation of the real situation. The holdings figures quoted are taken simply from the 1975 statistics published in *Australian Academic and Research Libraries*. These statistics do not necessarily use the same definitions as we have recommended in the application of our formulae. The microform volume figures quoted are not broken down into monographs and serials, while the current serial titles figures may well include the handbooks and calendars of educational institutions which we specifically exclude from our serials recommendations. The 1975 monograph acquisition statistics quoted would include a considerable amount of retrospective collection building by the various colleges, resulting from the application of special grants for this purpose, and we should expect the acquisition rate to be lower in the majority of colleges in 1976.

1. Western Australian Institute of Technology

Number of Students (EFT)	=	6,955
Number of Teaching Staff (FTE)	=	589
Number of Course areas with highest qualification level Associate Diploma	=	10
Number of Course areas with highest qualification level Diploma, Bachelor's Degree, Graduate Diploma	=	51
Number of Postgraduate Course areas with highest qualification level Postgraduate Diploma	=	10
Number of Postgraduate Course areas with highest qualification level Master's Degree	=	3

A. MONOGRAPH COLLECTION

1. Basic General Collection	=	5,000 volumes
Plus 3 General volumes per EFT student	=	20,865 volumes
2. Plus 1,500 volumes per Associate Diploma course area	=	15,000 volumes
Plus 2,750 volumes per Diploma/Bachelor's Degree/Graduate Diploma course area	=	140,250 volumes
Plus 2,750 volumes per Postgraduate Diploma course area	=	27,500 volumes
Plus 5,500 volumes per Masters course area	=	16,500 volumes

3.	Plus Basic Teaching Staff Collection	=	4,000 volumes
	Plus 60 volumes per FTE teaching staff	=	35,340 volumes
4.	Plus 16 volumes per EFT student	=	111,280 volumes
	TOTAL	=	375,735 volumes

(c.f. Actual Collection at 31 December 1975 = 259,560 volumes)

B. CURRENT SERIALS PROVISION

1.	Basic General Collection	=	75 titles
	Plus 1 title per 50 EFT students	=	139 titles
2.	Plus 60 titles per major course area	=	3,660 titles
3.	Plus 3 titles per FTE teaching staff up to 100 FTE	=	300 titles
	Plus 2 titles per FTE teaching staff between 101-200 FTE	=	200 titles
	Plus 1 title per FTE teaching staff over 200 FTE	=	389 titles
4.	Plus 1 duplicate title per 50 EFT students	=	139 titles
	TOTAL	=	4,902 titles

(c.f. Actual Collection at 31 December 1975 = 6,132 titles)

C. MINIMUM RETROSPECTIVE SERIALS COLLECTION

1.	Basic General Collection	=	400 bibliographic volumes
2.	Plus 480 bibliographic volumes per major course area (61)	=	29,280 bibliographic volumes
3.	Plus 20 bibliographic volumes per FTE teaching staff	=	11,780 bibliographic volumes
	TOTAL	=	41,460 bibliographic volumes

(c.f. Actual Collection at 31 December 1975 = 37,150 bibliographic volu

D. CURRENT ANNUAL MONOGRAPH ACQUISITION

8% of Total Monograph Collection

Recommendation	=	8% x 375,735 volumes
	=	30,059 volumes

(c.f. Actual Acquisition by Purchase in 1975 = 48,932 volumes)

2. Caulfield Institute of Technology

Number of Students (EFT)	=	3,044
Number of Teaching Staff (FTE)	=	312
Number of Course areas with highest qualification level Associate Diploma	=	0
Number of Course areas with highest qualification level Diploma, Bachelor's Degree, Graduate Diploma	=	25
Number of Postgraduate Course areas with highest qualification level Postgraduate Diploma	=	1
Number of Postgraduate Course areas with highest qualification level Master's Degree	=	0

A. MONOGRAPH COLLECTION

1. Basic General Collection	=	5,000 volumes
Plus 3 General volumes per EFT student	=	9,132 volumes
2. Plus 2,750 volumes per Diploma/Bachelor's Degree/Graduate Diploma course area	=	68,750 volumes
Plus 2,750 volumes per Postgraduate Diploma course area	=	2,750 volumes
3. Plus Basic Teaching Staff Collection	=	4,000 volumes
Plus 60 volumes per FTE Teaching Staff	=	18,720 volumes
4. Plus 16 volumes per EFT student	=	48,704 volumes
TOTAL	=	157,056 volumes

(c.f. Actual Collection at 31 December 1975 = 69,301 volumes

B. CURRENT SERIALS PROVISION

1. Basic General Collection	=	75 titles
Plus 1 title per 50 EFT students	=	61 titles
2. Plus 60 titles per major course area	=	1,500 titles
3. Plus 3 titles per FTE teaching staff up to 100 FTE	=	300 titles
Plus 2 titles per FTE teaching staff between 101-200 FTE	=	200 titles
Plus 1 title per FTE teaching staff over 200 FTE	=	112 titles
4. Plus 1 duplicate title per 50 EFT students	=	61 titles
TOTAL	=	2,309 titles

(c.f. Actual Collection at 31 December 1975 = 2,469 titles)

C. MINIMUM RETROSPECTIVE SERIALS COLLECTION

1. Basic General Collection	=	400 bibliographic volumes
2. Plus 480 bibliographic volumes per major course area (25)	=	12,000 bibliographic volumes
3. Plus 20 bibliographic volumes per FTE teaching staff	=	6,240 bibliographic volumes
TOTAL	=	18,640 bibliographic volumes

(c.f. Actual Collection at 31 December 1975 = 7,994 bibliographic volu

D. CURRENT ANNUAL MONOGRAPH ACQUISITION

8% of Total Monograph Collection

Recommendation	= 8%	x 157,056 volumes
	=	12,564 volumes

(c.f. Actual Acquisition by Purchase in 1975 = 14,006 volumes)

3. Capricornia Institute of Advanced Education

Number of Students (EFT)	=	1,027
Number of Teaching Staff (FTE)	=	126
Number of Course areas with highest qualification level Associate Diploma	=	1
Number of Course areas with highest qualification level Diploma, Bachelor's Degree, Graduate Diploma	=	23
Number of Postgraduate Course areas with highest qualification level Postgraduate Diploma	=	1
Number of Postgraduate Course areas with highest qualification level Master's Degree	=	0

A. MONOGRAPH COLLECTION

1. Basic General Collection	=	5,000 volumes
Plus 3 General volumes per EFT student	=	3,081 volumes
2. Plus 1,500 volumes per Associate Diploma course area	=	1,500 volumes
Plus 2,750 volumes per Diploma/Bachelor's Degree/Graduate Diploma course area	=	63,250 volumes
Plus 2,750 volumes per Postgraduate Diploma course area	=	2,750 volumes

3. Plus Basic Teaching Staff Collection	=	4,000 volumes
Plus 60 volumes per FTE Teaching Staff	=	7,560 volumes
4. Plus 16 volumes per EFT student	=	16,432 volumes
TOTAL	=	103,573 volumes

(c.f. Actual Collection at 31 December 1975 = 31,867 volumes)

B. CURRENT SERIALS PROVISION

1. Basic General Collection	=	75 titles
Plus 1 title per 50 EFT students	=	21 titles
2. Plus 60 titles per major course area	=	1,440 titles
3. Plus 3 titles per FTE Teaching Staff up to 100 FTE	=	300 titles
Plus 2 titles per FTE Teaching Staff between 101-200 FTE	=	52 titles
4. Plus 1 duplicate title per 50 EFT students	=	21 titles
TOTAL	=	1,909 titles

(c.f. Actual Collection at 31 December 1975 = 1,150 titles)

C. MINIMUM RETROSPECTIVE SERIALS COLLECTION

1. Basic General Collection	=	400 bibliographic volumes
2. Plus 480 bibliographic volumes per major course area (24)	=	11,520 bibliographic volumes
3. Plus 20 bibliographic volumes per FTE Teaching Staff	=	2,520 bibliographic volumes
TOTAL	=	14,440 bibliographic volumes

(c.f. Actual Collection at 31 December 1975 = 4,435 bibliographic volumes)

D. CURRENT ANNUAL MONOGRAPH ACQUISITION

8% of Total Monograph Collection

Recommendation	=	8% x 103,573 volumes
	=	8,286 volumes

(c.f. Actual Acquisition by Purchase in 1975 = 8,640 volumes)

4. North Brisbane College of Advanced Education

Number of Students (EFT)	=	972
Number of Teaching Staff (FTE)	=	82
Number of Course areas with highest qualification level Associate Diploma	=	2
Number of Course areas with highest qualification level Diploma, Bachelor's Degree, Graduate Diploma	=	9
Number of Postgraduate Course areas with highest qualification level Postgraduate Diploma	=	0

A. MONOGRAPH COLLECTION

1. Basic General Collection	=	5,000 volumes
Plus 3 General volumes per EFT student	=	2,916 volumes
2. Plus 1,500 volumes per Associate Diploma course area	=	3,000 volumes
Plus 2,750 volumes per Diploma/Bachelor's Degree/Graduate Diploma course area	=	24,750 volumes
3. Plus Basic Teaching Staff Collection	=	4,000 volumes
Plus 60 volumes per FTE Teaching Staff	=	4,920 volumes
4. Plus 16 volumes per EFT student	=	15,552 volumes
TOTAL	=	60,138 volumes

(c.f. Actual Collection at 31 December 1975 = 33,915 volumes)

B. CURRENT SERIALS PROVISION

1. Basic General Collection	=	75 titles
Plus 1 title per 50 EFT students	=	19 titles
2. Plus 60 titles per major course area	=	660 titles
3. Plus 3 titles per FTE Teaching Staff up to 100 FTE	=	246 titles
4. Plus 1 duplicate title per 50 EFT students	=	19 titles
TOTAL	=	1,019 titles

(c.f. Actual Collection at 31 December 1975 = 905 titles)

C. MINIMUM RETROSPECTIVE SERIALS COLLECTION

1. Basic General Collection	=	400 bibliographic volumes
2. Plus 480 bibliographic volumes per major course area (11)	=	5,280 bibliographic volumes
3. Plus 20 bilbiographic volumes per FTE teaching staff	=	1,640 bibliographic volumes
TOTAL	=	7,320 bibliographic volumes

(c.f. Actual Collection at 31 December 1975 = Not Available)

D. CURRENT ANNUAL MONOGRAPH ACQUISITION

8% of Total Monograph Collection

Recommendation	=	8% x 60,138 volumes
	=	4,811 volumes

(c.f. Actual Acquisition by Purchase in 1975 = 3,825 volumes)

5. Cumberland College of Health Sciences

Number of Students (EFT)	=	829
Number of Teaching Staff (FTE)	=	120
Number of Course areas with highest qualification level Associate Diploma	=	2
Number of Course areas with highest qualification level Diploma, Bachelor's Degree, Graduate Diploma	=	4
Number of Course areas with highest qualification level Postgraduate Diploma	=	3

A. MONOGRAPH COLLECTION

1. Basic General Collection	=	5,000 volumes
Plus 3 General volumes per EFT student	=	2,487 volumes
2. Plus 1,500 volumes per Associate Diploma course area	=	3,000 volumes
Plus 2,750 volumes per Diploma/Bachelor's Degree/Graduate Diploma course area	=	11,000 volumes
Plus 2,750 volumes per Postgraduate Diploma course area	=	8,250 volumes
3. Plus Basic Teaching Staff Collection	=	4,000 volumes
Plus 60 volumes per FTE Teaching Staff	=	7,200 volumes
4. Plus 16 volumes per EFT student	=	13,264 volumes
TOTAL	=	54,201 volumes

(c.f. Actual Collection at 31 December 1975 = 23,907 volumes)

B. CURRENT SERIALS PROVISION

1. Basic General Collection	=	75 titles
Plus 1 title per 50 EFT students	=	17 titles
2. Plus 60 titles per major course area	=	360 titles
3. Plus 3 titles per FTE Teaching Staff up to 100 FTE	=	300 titles
Plus 2 titles per FTE Teaching Staff between 101-200 FTE	=	40 titles
4. Plus 1 duplicate title per 50 EFT students	=	17 titles
TOTAL	=	809 titles

(c.f. Actual Collection at 31 December 1975 = 811 titles)

C. MINIMUM RETROSPECTIVE SERIALS COLLECTION

1. Basic General Collection	=	400 bibliographic volumes
2. Plus 480 bibliographic volumes per major course area	=	2,880 bibliographic volumes
3. Plus 20 bibliographic volumes per FTE teaching staff	=	2,400 bibliographic volumes
TOTAL	=	5,680 bibliographic volumes

(c.f. Actual Collection at 31 December 1975 - Not Available)

D. CURRENT ANNUAL MONOGRAPH ACQUISITION

8% of Total Monograph Collection

Recommendation	=	8% x 54,201 volumes
	=	4,336 volumes

(c.f. Actual Acquisition by Purchase in 1975 = 9,000 volumes)

APPENDIX 3

LIST OF FIELDS OF STUDY IN COLLEGES

GROUP 1 AGRICULTURAL STUDIES

GROUP 2 APPLIED SCIENCES

GROUP 3 ART AND DESIGN STUDIES

GROUP 4 BUILDING, SURVEYING AND ARCHITECTURAL STUDIES

GROUP 5 COMMERCIAL AND BUSINESS STUDIES

GROUP 6 ENGINEERING AND TECHNOLOGY

GROUP 7 GENERAL AND LIBERAL STUDIES

GROUP 8 PARAMEDICAL STUDIES

GROUP 9 TEACHER EDUCATION

Each line in the following list represents a single field of study for the purposes of formulae calculations.

1. AGRICULTURAL STUDIES

Agriculture/Agricultural Science/Agricultural Technology
Agricultural Education
Agricultural Engineering see ENGINEERING AND TECHNOLOGY
Agricultural Management
Dairy Technology
Farm Management see Agricultural Management
Food Technology/Food Science and Technology
Forestry
Horticultural Technology
Oenology
Poultry Technology
Rural Management see Agricultural Management
Rural Technology
Viticulture see Oenology

2. APPLIED SCIENCES

Applied . . . . see name of subject
Biochemistry
Biology/Applied Biology
Chemistry/Applied Chemistry
Chemistry and Microbiology see Chemistry, Microbiology
Chemistry of Dyeing see Dye Chemistry
Computer Studies/Computing/Computing Science
Dye Chemistry
Earth Sciences
Ecological Studies see Environmental Studies
Economic Geology
Environmental Studies/Environmental Science

Geology/Applied Geology/Geoscience
Geophysics
Industrial Chemistry, see Chemistry, ENGINEERING AND TECHNOLOGY
Instrumentation Science/Instrument Technology
Life Management
Malting and Brewing
Materials Science
Mathematics/Applied Mathematics
Measurement Science see Instrumentation Science
Microbiology
Operations Research
Physical Science
Physics/Applied Physics
Quantitative Methods see Mathematics, Statistics
Remote Sensing
Science (General)
Statistics
Textile Chemistry
Viticulture see AGRICULTURAL STUDIES

3. ART AND DESIGN STUDIES

Art
Art and Design
Art Education/Art Teaching/Art Teacher Education
Ceramic Design/Ceramics
Commercial Art
Costume Arts
Crafts see Industrial Arts
Creative Arts
Design
Embroidery see Costume Arts
Fashion Design/Fashion Design and Production see Costume Arts
Film and Television
Fine Art/Fine Arts
Furniture Design see BUILDING, SURVEYING AND ARCHITECTURAL STUDIES - Interior Design
Gold and Silver Smithing see Fine Art
Graphic Art/Graphic Design/Graphics
Illustrative Photography see Photography
Industrial Arts
Industrial Design
Manual Arts see Industrial Arts
Painting
Photography
Pottery
Printmaking
Product Design see Industrial Design
Sculpture
Textile Design see Industrial Design
Visual Arts

4. BUILDING, SURVEYING AND ARCHITECTURAL STUDIES

Architecture
Building/Building Operations/Building Technology
City Planning see Urban and Regional Planning
Environmental Design
Interior Design
Landscape Architecture/Landscape Design/Landscape Planning
Planning see Urban and Regional Planning
Quantity Surveying
Surveying
Town Planning see Urban and Regional Planning
Urban and Regional Planning

5. COMMERCIAL AND BUSINESS STUDIES

Accounting/Accountancy
Administration see Business Administration
Advertising see Business Communication
Articled Clerks see Legal Studies
Banking
Business Administration/Business Studies/Business
Business Communication
Business Education
Commerce/Commercial Studies
Consumer Affairs
Cost and Management Accounting see Financial Management
Credit Management see Financial Management
Data Processing/Electronic Data Processing
Domestic Arts/Science see Home Science and Economics
Educational Administration
Electronic Computation see Data Processing
Electronic Data Processing see Data Processing
Food Service Management/Food Processing
Home Science and Economics
Hotel and Catering Management/Hospitality Management
Industrial Management see Management
Industrial Relations
Information Processing see Data Processing
Insurance
Legal Studies/Legal Practice/Law/Articled Clerks
Local Government/Local Government Administration
Management/Management Studies
Marketing/Marketing Administration
Operations Management see Production Management, Physical Distribution Management
Personnel Management/Personnel Administration
Physical Distribution Management
Planning and Financial Management see Financial Management
Production Management
Property Valuation see Valuation
Public Administration
Public Relations
Quantitative Studies
Real Estate Valuation see Valuation
School Administration see Educational Administration
Secretarial Studies/Secretarial Administration/Secretarial Practice
Tourism/Travel
Transport Administration
Valuation

6. ENGINEERING AND TECHNOLOGY

Aeronautical Engineering
Agricultural Engineering
Air Conditioning/Refrigeration Engineering
Automatic Control see Control Engineering
Biochemical Engineering
Cartography
Chemical Engineering/Chemical Process Technology
Civil Engineering
Communications Engineering
Control Engineering
Electrical Engineering
Electrical/Electronic Engineering
Electronic Engineering
Engineering
Engineering Materials
Environmental Engineering
Fuel Technology
Industrial Engineering
Instrument Technology see APPLIED SCIENCES
Local Government Engineering
Materials Science see APPLIED SCIENCES
Materials Technology see Engineering Materials
Measurement Science Technology see APPLIED SCIENCES
Mechanical Engineering
Metallurgy (Primary and Secondary)
Mineral Engineering
Mining Engineering/Mining Technology
Mining Geology
Naval Architecture
Power Engineering see Electrical Engineering
Process Engineering see Chemical Engineering
Production Engineering
Refrigeration Engineering see Air Conditioning/Refrigeration Engineering
Structural Engineering
Surveying see BUILDING, SURVEYING AND ARCHITECTURAL STUDIES
Textile Technology see also APPLIED SCIENCES

7. GENERAL AND LIBERAL STUDIES

Aboriginal Studies
Anthropology
Applied ... see Name of Subject
Arts see General Studies
Asian Studies see also East Asian Studies, South-East Asian Studies
Australian Studies
Behavioural Science see also Psychology
Communication Studies/Communications see also Media Studies
Community Recreation see Recreation Studies
Community Social Services see Community Studies, Social Work
Community Studies/Community Planning and Development
Community Welfare see Social Work
Consumer Affairs see COMMERCIAL AND BUSINESS STUDIES
Creative Writing see also English, Journalism
Criminology
Dance see Performing Arts
Drama/Dramatic Arts see Performing Arts
East Asian Studies see also Asian Studies
Economics
English

Film and Television see Communication Studies
General Studies/Liberal Arts/Liberal Studies
Geography
German
Government see Politics, COMMERCIAL AND BUSINESS STUDIES - Local Government
Greek
History
History and Philosophy of Science
Human Development see also Psychology
Indonesian Studies see Malay/Indonesian Studies, South-East Asian Studies
Information Science see also Librarianship
Italian
Japanese
Journalism
Language Studies/Language Arts
Latin
Liberal Studies see General Studies
Librarianship/Library Studies/Library and Information Science
Linguistics see Language Studies
Literature see also English
Malay/Indonesian Studies see also South-East Asian Studies
Mass Communications see Communication Studies
Media Studies see also Communication Studies
Modern Greek see Greek
Modern Languages see Language Studies
Music (Theory and Arts)
Music (Instrumental and Vocal)
Performing Arts
Philosophy
Political Economy see Economics, Politics
Politics/Political Science
Professional Writing see Journalism
Psychology see also TEACHER EDUCATION
Public Relations see COMMERICAL AND BUSINESS STUDIES
Recreation Studies
Religious Studies
Russian
Social Philosophy see Sociology
Social Science see also Anthropology, Sociology, etc.
Social Work
Sociology
South-East Asian Studies see also Asian Studies
Teacher Librarianship see Librarianship, TEACHER EDUCATION - School Librarianship
Urban Studies
Vocational Writing see Journalism
Welfare Work see Social Work

8. PARAMEDICAL STUDIES

Bioinstrumentation
Biological Laboratory Science see Medical Technology
Biomedical Science
Chiropody
Community Health Nursing
Dental Therapy
Diagnostic Radiography see Medical Radiography
Dietetics see Nutrition and Food Science
Environmental Health
Food Science see Nutrition and Food Science
Health Surveying
Joint Manipulation see Manipulative Therapy

Manipulative Therapy
Medical Physics
Medical Technology/Medical Laboratory Technology
Medical Nucleography see Medical Radiography
Medical Radiography (Diagnostic and Therapeutic)
Medical Radiotherapy see Medical Radiography
Nursing/Nursing Education/Nursing Science/Nursing Studies
Nursing Administration
Nutrition and Food Science
Occupational Therapy
Optometry
Oral Communication see Speech Therapy
Orthoptics
Pharmacy
Physiotherapy/Physical Therapy
Radiography see Medical Radiography
Speech Therapy/Speech Science
Therapeutic Radiography see Medical Radiography

9. TEACHER EDUCATION

Adult Education/Extension
Art Education see ART AND DESIGN STUDIES
Art and Crafts see Art Education, Manual Arts Education
Child Development see Educational Psychology
Commercial Studies/Commerce and Geography
Counselling see Educational Counselling
Curriculum and Instruction
Deaf Education
Early Childhood Education
Education Administration see COMMERICAL AND BUSINESS STUDIES
Educational Psychology
Health Education
Human Movement Studies see Physical Education
Infant Education see Early Childhood Education
Language Studies
Learning Difficulties see Remedial Education
Manual Arts Education
Migrant Education
Music Education
Physical Education
Primary Education
School Librarianship
School Management see COMMERCIAL AND BUSINESS STUDIES
Science Education
Secondary Education
Social Science Education
Special Education
Speech and Drama

In the counting of course areas for Teacher Education in multidisciplinary colleges, no area should be counted if the area is also offered as a major in other course programmes, e.g. 'Music Education' is not to be counted if 'Music' programme is also offered outside the teacher education programmes. In all colleges offering teacher education programmes, 'Primary Education' and/or 'Secondary Education', 'Curriculum and Instruction' and 'Educational Psychology' are to be counted automatically.

APPENDIX 4

LETTERS AND FORMS SENT TO TEACHING STAFF IN COLLEGES OF ADVANCED EDUCATION IN ORDER TO OBTAIN INFORMATION RELATING TO THEIR MONOGRAPH AND SERIAL USAGE

Hayman Road
South Bentley 6102
Telephone 68 5511
Telex AA 92983

Department of Library Studies

Western Australian Institute of Technology

File No.:
Reply to:
Your Ref.:

Dear

Commission on Advanced Education
Library Collections Research Project

I am engaged in a major research project financed by the Commission on Advanced Education, which is designed to investigate the adequacy of library collections in the Colleges of Advanced Education in relation to educational needs, and make recommendations to the Commission regarding the future development of such collections.

As part of the project, a series of tests have been devised, using samples of documents needed in particular subject areas. The subject areas chosen include the field in which you are teaching, and the purpose of this letter is to ask for your assistance in the compilation of a suitable sample of documents.

We wish to compile a list of the reading material which is recommended to students by lecturers in your subject area in Colleges of Advanced Education throughout Australia. (Either as textbooks, further reading, on reading lists, or simply references made during classes; and including books, journal articles, or any other forms of material referred to).

I should be very grateful if you were able to send me as soon as possible, and not later than the a list of the reading matter you recommend to your students in each of the units in which you lecture or tutor. I enclose some sheets on which the references for each unit may be entered, but if you already have all the references conveniently collected together, e.g. on a complete reading list for the unit, please send that instead, as this will save time. Please would you ensure that the name of each unit is included in your reply.

I should be grateful if you were able also to enter on sheet B, a list of the journal titles which you find to be the most important and useful to read or scan regularly in relation to your undergraduate teaching, directly or indirectly (i.e. not including journals which you may read solely for your own interest or personal research).

..../2

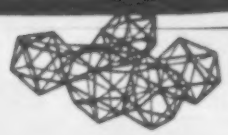
I hope very much that you will co-operate in this project as I believe that a successful outcome to the research will help greatly in ensuring better library provision in C.A.E.'s for students and staff involved in your subject area. Any information that you may provide for this research will be kept entirely confidential, and no individual replies will be available to any person other than myself or my secretary. I enclose a pre-paid addressed envelope for your reply.

You may find the consolidated list of references, when compiled, to be of some use to you. If you would like a copy to be sent to you, please indicate this when replying.

Yours sincerely,

ERIC WAINWRIGHT
Research Fellow

Hayman Road
South Bentley 6102
Telephone 68 5511
Telex AA 92983



Department of Library Studies

Western Australian Institute of Technology

File No.:
Reply to:
Your Ref.:

Dear

Commission on Advanced Education
Library Collections Research Project

I enclose a copy of a letter that I have sent to members of lecturing staff in your department, in connection with a research project, funded by the Commission on Advanced Education, investigating the adequacy of library collections in Colleges of Advanced Education throughout Australia. As you will see, the letter requests some assistance in drawing up a list of journals required in your department's subject area for the purpose of making tests in various libraries.

I believe that a successful outcome to this research is likely to result in improved library provision for students and staff in your department, and I should be very grateful for your encouragement of your staff's co-operation, and, if you are yourself engaged in teaching, your own reply.

Yours sincerely

ERIC WAINWRIGHT
Research Fellow

187/188

South Bentley 6102
Telephone 68 5511
Telex AA 92983

Department of Library Studies

Western Australian Institute of Technology

File No.:
Reply to:
Your Ref.:

Dear

Commission on Advanced Education
Library Collections Research Project

You will have received from me a letter dated requesting some assistance with a research project, for the Commission on Advanced Education, investigating the adequacy of library collections in Colleges of Advanced Education.

I don't appear to have received any reply from you at present, and I should be most grateful if you were able to help by meeting my request as soon as you are able. I realise, having been lecturing myself until recently, that you will be extremely busy with other tasks, but I hope that you may find the time to help with what, I believe, is a project of considerable potential benefit to your department and similar departments in other institutions, if possible by

I enclose another copy of the original letter in case you did not receive it the first time.

Yours sincerely,

ERIC WAINWRIGHT
Research Fellow

APPENDIX 5

TEST INSTRUMENT AND DETAILED RESULTS FOR DOCUMENT DELIVERY TESTS

DOCUMENT DELIVERY TEST

INSTITUTION CODE ☐☐ 1-2 SUBJECT CODE ☐☐ 3-4

SAMPLE NUMBER ☐ CASE NUMBER ☐☐☐ 6-8

AUTHOR _____

TITLE _____
(Monograph or Journal)

_____ Edition _____

VOLUME _____ PUBN. DATE _____ PAGES _____

		OFFICE USE
1. IN LIBRARY COLLECTION?	YES ☐ LOCATION _____ No ☐	☐ 9
2. ON IMMEDIATE PREMISES	YES ☐ NO ☐ If no, specify where _____	☐ 10 ☐ 11
3. ON SHELF?	YES ☐ NO ☐	☐ 12
4. IF NOT ON SHELF:- A. ON LOAN? 1. RESERVE LOAN ☐ 2. STUDENT LOAN ☐ 3. STAFF LOAN ☐ 4. INTER-LIBRARY LOAN ☐ 5. OTHER (Specify) _____ ☐		☐ 13

B. OTHER

1. TO BE SHELVED ☐
2. AT BINDING ☐
3. IN PROCESSING, BUT AVAILABLE (specify) _____ ☐
4. IN PROCESSING, NOT AVAILABLE (specify) _____ ☐
5. RECORDED AS MISSING ☐
6. IN SPECIAL LOCATION, ACCESSIBLE TO USER (specify) _____ ☐
7. IN SPECIAL LOCATION, AVAILABLE VIA LIBRARIAN ONLY (specify) _____ ☐
8. OTHER KNOWN STATUS (specify) _____ ☐

☐ 14

C. ITEMS NOT FOUND ON FIRST SEARCH

1. ON SHELF IN SECOND SEARCH ☐
2. OTHER RESULT IN SECOND SEARCH (specify) _____ ☐
3. STILL CAN'T LOCATE ☐

☐ 15

5. ESTIMATED DELIVERY TIME

1. LESS THAN 10 MINUTES ☐
2. MORE THAN 10 MINUTES, LESS THAN 2 HOURS ☐
3. MORE THAN 2 HOURS, LESS THAN 24 HOURS ☐
4. MORE THAN 24 HOURS, LESS THAN 1 WEEK ☐
5. MORE THAN 1 WEEK ☐

☐ 16

6. COMMENTS (Any special difficulties)

DOCUMENT DELIVERY TEST RESULTS

1. BALLARAT INSTITUTE OF ADVANCED EDUCATION

Date of Tests: 21 July - 24 July, 1975

Loan Periods : General Collection - Staff, 1 month, with some Semester loans

- Students, 1 week

Reserve Collection - Overnight, and two hours during day

Number of volumes on loan at test time = 1170 approx.

	Accounting	Chemistry	Mechanical Engineering	Social Sciences
Class 1 (<10 minutes)				
On Shelf First Search	150	124	150	106
Class 2 (10 minutes - 2 hours)				
On Reserve Loan	2	2	1	0
In Stack	2	0	0	0
In Special Location	4	0	0	10
Class 3 (2 hours - 24 hours)				
On Shelf Second Search	2	0	0	1
At Cataloguing	4	2	1	5
Class 4 (24 hours - 1 week)				
On General Loan	3	5	12	11
At Branch Library (college delivery)	0	7	6	0
Class 5 (>1 week)				
Missing (known)	4	2	2	2
Not Located	3	6	7	4
On Order	0	0	5	2
Total Held/On Order	174	148	184	141
Total Not Held	133	156	117	276
Sample Total	307	304	301	417

2. GIPPSLAND INSTITUTE OF ADVANCED EDUCATION

Date of Tests: 27 May - 30 May, 1975

Loan Periods : General Collection - Staff, 4 weeks, with some Semester loans
- Internal students, 2 weeks with some 3 day loans
- External students, 3 weeks

Reserve Collection - overnight

Number of volumes on loan at test time = 1730 approx.

	Accounting	Chemistry	Mechanical Engineering	Social Sciences
Class 1 (<10 minutes)				
On Shelf First Search	104	96	111	108
Class 2 (10 minutes - 2 hours)				
On Reserve Loan	0	0	0	0
To be Shelved First Search	0	0	2	1
In Special Location	0	3	8	8
Class 3 (2 hours - 24 hours)				
On Shelf Second Search	0	0	0	0
To be Shelved Second Search	1	0	0	0
Class 4 (24 hours - 1 week)				
On General Loan	7	11	9	6
At Cataloguing	1	0	1	2
At Re-cataloguing	1	0	0	0
At Branch Library (college delivery)	1	1	2	0
Class 5 (>1 week)				
At Binding	0	0	0	1
Missing (known)	1	2	2	1
Not Located	3	0	5	0
On Order	0	4	3	5
Total Held/On Order	119	117	143	132
Total Not Held	189	193	161	281
Sample Total	308	310	304	413

3. ROYAL MELBOURNE INSTITUTE OF TECHNOLOGY

Date of Tests: September 1975

Loan Periods: General Collection - Staff, 1 month
- Students, 14 days average

Short-Term Collection - 7 days average

Reserve Collection - 2 hours

Number of volumes on loan at test time = 10,080 approx.

	Accounting	Arch-tecture	Chemistry	Mechanical Engineering	Social Sciences
Class 1 (<10 minutes)					
On Shelf First Search	117	139	143	178	135
Class 2 (10 minutes - 2 hours)					
On Reserve Loan	0	1	0	0	0
To be Shelved First Search	1	0	2	0	0
Class 3 (2 hours - 24 hours)					
On Shelf Second Search	1	3	3	6	0
In Closed Stack	35	11	3	13	23
Class 4 (24 hours - 1 week)					
On General Loan	11	18	19	18	20
At Branch Library	1	0	0	0	0
At Cataloguing	3	6	3	0	2
Class 5 (>1 week)					
At Binding	6	0	1	0	0
On Order	4	5	4	4	6
Missing (known)	0	0	0	0	1
Not Located	15	14	13	13	16
Total Held/On Order	194	197	191	232	203
Total Not Held	115	112	113	71	216
Sample Total	309	309	304	303	419

4. SOUTH AUSTRALIAN INSTITUTE OF TECHNOLOGY

Date of Tests: September 1975

Loan Periods : General Collection - Staff, 13 weeks
- Students, 2 weeks

Reserve Collection - Staff, 1 week or 3 days
- Students, overnight

Number of volumes on loan at test time = 4,200 approx.

	Accounting	Architecture	Mechanical Engineering
Class 1 (<10 minutes)			
On Shelf First Search	175	98	140
Class 2 (10 minutes - 2 hours)			
To be Shelved First Search	0	0	1
Class 3 (2 hours - 24 hours)			
On Shelf Second Search	0	2	0
Class 4 (24 hours - 1 week)			
On General Loan	7	14	7
At Branch Library (in City)	9	33	17
In Stack	0	1	1
Class 5 (>1 week)			
On Inter-Library Loan	0	0	1
At Branch Library (Whyalla)	0	0	12
On Order	2	0	1
Missing (known)	0	4	0
Not Located	19	12	4
Total Held/On Order	212	164	184
Total Not Held	97	142	117
Sample Total	309	306	301

5. WESTERN AUSTRALIAN INSITUTE OF TECHNOLOGY

Date of Tests: October 1974

Loan Periods : General Collection, 1 semester
Reserve Collection, 2 hours

Number of volumes on loan at test time = 8,500 approx.

	Accounting	Architecture	Chemistry	Mechanical Engineering	Pharmacy	Social Sciences
Class 1 (<10 minutes)						
On Shelf First Search	191	159	154	144	151	206
Class 2 (10 minutes - 2 hours)						
On Reserve Loan	0	0	0	1	0	1
In External Collection	4	3	1	2	0	10
To be Shelved First Search	1	0	0	0	0	1
Class 3 (2 hours - 24 hours)						
On Shelf Second Search	7	2	10	2	9	2
To be Shelved Second Search	1	0	0	0	0	0
On Reserve Loan (with reservation)	0	0	0	0	1	0
Class 4 (24 hours - 1 week)						
At Cataloguing	13	6	9	5	8	10
At Branch Library (in City)	0	1	1	0	4	0
At Re-cataloguing	1	1	1	2	0	1
Class 5 (>1 week)						
On Semester Loan	23	31	35	34	35	11
At Binding	0	0	2	0	0	0
On Order	7	6	1	9	10	17
Missing (known)	0	0	3	0	0	1
Not Located	16	14	5	12	7	7
At Branch Library (Kalgoorlie/Muresk)	2	3	14	12	7	4
Total Held/On Order	266	226	236	223	232	271
Total Not Held	39	75	64	73	72	142
Sample Total	305	301	300	296	304	413

APPENDIX 6

COURSE UNITS SURVEYED AND SURVEY INSTRUMENTS USED IN EXAMINATION OF SOURCES OF STUDY MATERIALS USED BY STUDENTS

Units were selected as being part of undergraduate programmes in the fields of Accounting, Architecture, Chemistry, Mechanical Engineering, Pharmacy, Physiotherapy and Social Sciences. Units have been grouped under these terms, regardless of the programme nomenclature actually used by individual colleges. The names of the departments or schools offering each group of units are listed in parentheses.

1. Bendigo Institute of Technology

Accounting (Department of Accounting)

1st year - General Accounting B

2nd year - Accounting 11A

3rd year - Accounting 111A

Chemistry (Deparment of Applied Chemistry)

1st year - Chemistry 1

2nd year - Physical Chemistry 2) 'old' diploma and
Chemistry 2B) 'new' degree units

3rd year - Inorganic Chemistry 3

Mechanical Engineering (Department of Mechanical Engineering)

1st year - Mechanical Engineering 1

2nd year - Mechanical Design 1

3rd year - Fluid Mechanics

Social Sciences (Department of Humanities)

1st year - Economic Theory and Organ.zation 1

2nd year - Politics 11

3rd year - Sociology 111

2. Gippsland Insitutute of Advanced Education

Accounting (School of Business and Social Sciences)

1st year - Accounting 1

2nd year - Company Accounting

3rd year - Advanced Managerial Accounting

Chemistry (School of Engineering and Applied Science)

1st year - Physical Science A2

2nd year - Chemistry A

3rd year - Analytical Chemistry

Mechanical Engineering (School of Engineering and Applied Science)

1st year - Statics

2nd year - Industrial Engineering and Design

3rd year - Fluid Mechanics and Heat Transfer

Social Sciences (School of Business and Social Sciences)

1st year - Introduction to Political Economy

2nd year - Government and Society in the Soviet Union

3rd year - Ritualization)
Sociology of Migration)
Industrial Sociology)

3. Lincoln Institute

Physiotherapy (School of Physiotherapy)

1st year - Physiotherapy 1

2nd year - Physiotherapy 11

3rd year - Physiotherapy 111

4. Royal Melbourne Institute of Technology

Accounting (Department of Accountancy Studies)

1st year - General Accounting

2nd year - Corporate Accounting

3rd year - Business Finance 2

Architecture (Department of Architecture)

1st year - Communications

2nd year - History A

3rd year - Professional Practice 1

4th year - Building Design 2

Chemistry (Department of Applied Chemistry)

1st year - Chemistry 1A

2nd year - Applied Chemistry 2

3rd year - Applied Chemistry 3

Mechanical Engineering (Department of Mechanical and Production Engineering)

1st year - Engineering Analysis

2nd year - Engineering Design

3rd year - Fluid Mechanics

Social Sciences (Department of Humanities)

1st year - Economics 1 (Department of Accountancy Studies)

2nd year - Politics 2A

3rd year - Sociology 3A

5. South Australian Institute of Technology

Accounting (Department of Accountancy)

1st year - Accounting 1

2nd year - Accounting 11

3rd year - Accounting 111

Architecture (School of Architecture and Building)

1st year - Tectonics 1

3rd year - Architectural History 1

5th year - Architectural Practice

Chemistry (School of Chemical Technology)

1st year - Chemistry 1T

2nd year - Chemistry 11 Inorganic

3rd year - Chemical Instrumentation

Pharmacy (School of Pharmacy)

1st year - Biology 1

2nd year - Pharmaceutics 1

Physiotherapy (Department of Physiotherapy)

1st year - Physiotherapy 1

2nd year - Physiotherapy 11D

3rd year - Physiotherapy 111B

6. Western Australian Institute of Technology

Accounting (Department of Accounting)

1st year - Accounting Systems 100B

2nd year - Finance 200A

3rd year - Accounting 300B)
- Financial Management 301)

Architecture (Department of Architecture)

1st year - Architecture 102

2nd year - Architectural History 202

4th year - Architectural Practice 402

Chemistry (Department of Chemistry)

1st year - Chemistry 103

2nd year - Physical Chemistry 202

3rd year - Chemistry 302

Mechanical Engineering (Department of Mechanical Engineering)

1st year - Mechanics 102

2nd year - Mechanical Design 202

3rd year - Fluid Mechanics 332B

Pharmacy (Department of Pharmacy)

1st year - Pharmaceutics 120B

2nd year - Pharmaceutical Biology 221

3rd year - Pharmacology 320B

Physiotherapy (Department of Therapy)

1st year - Kinesiology 102

2nd year - Exercise Therapy 202

Social Sciences

1st year - Economics 112

2nd year - Politics 212

3rd year - Sociology 314

Note: In the forms following, where a blank space appears, this was filled on the forms issued to students at each college by the initials of the college involved, e.g. WAIT.

C.A.E. LIBRARY COLLECTIONS RESEARCH PROJECT

Name of College _____

Title of Course Unit _____

Please record on this sheet details of the published item (book, journal, cassette tape, slide etc.) that you have used most recently in connection with your studies in this course unit only.

Please place a tick (√) in the appropriate boxes.

Q.1. What kind of study material did you use?

- ☐ Book
- ☐ Journal
- ☐ Tape Recording
- ☐ Slide/Film Strip
- ☐ Film (i.e. moving)
- ☐ Print (e.g. Art print) or photograph
- ☐ Map
- ☐ Other form of material
  (Please specify _____
  _____)

Q.2. Where did you obtain this study material?

- ☐ My own copy
- ☐ Borrowed copy from a friend or another student
- ☐ Used copy supplied by lecturer/tutor or available within my College Department/School
- ☐ Used copy borrowed from this College's Library
- ☐ Used copy within this College's Library (i.e. without borrowing it)
- ☐ Used College Library Reserve Collection copy
- ☐ Used copy belonging to another library
  (Name of library _____)
- ☐ Other source (Please specify_____
  _____)

Q.3. Are you undertaking studies at this college

- ☐ Full-Time?
- ☐ Part-Time?

THANK YOU FOR YOUR HELP

C.A.E. LIBRARY COLLECTIONS RESEARCH PROJECT

College _____ Name of Unit _____

Please enter brief details for each item you want to read, look at, or listen to in connection with your studies in this unit only, whether or not you were actually successful in obtaining the item you were looking for.

For each item, place a tick (✓) in the appropriate column(s). More than one column may need to be ticked.

B

204

A. USE OF SPECIFIC ITEMS

	AUTHOR	TITLE OR JOURNAL REFERENCE	No action taken (i.e. no real effort made to use item)	Used own copy/Bought a copy	Used copy belonging to a friend or another student	Used copy supplied by lecturer or available in Department/School	Checked ... Library but item not in catalogue or journal list	Item listed as being in ... Library but could not find when looked for it	Used copy borrowed from ... Library	Used library copy within ... Library (i.e. without borrowing)	Used ... Reserve collection copy	Used another item in ... Library which was a reasonable substitute	Reserved ... Library copy on loan to another reader	Requested copy on inter-library loan	Requested copy to be bought for ... Library	Used copy within or borrowed from another library (please specify which)	Any other action taken (Please specify)
1.																	
2.																	
3.																	
4.																	
5.																	

203

204

S.1

A. USE OF SPECIFIC ITEMS		No action taken (i.e. no real effort made to use item)	Used own copy/Bought a copy	Used copy belonging to a friend or another student	Used copy supplied by lecturer or available in Department/School	Checked ... Library but item not in catalogue or journal list	Item listed as being in ... Library but could not find when looked for it	Used copy borrowed from ... Library	Used library copy within ... Library (i.e. without borrowing)	Used ... Reserve collection copy	Used another item in ... Library which was a reasonable substitute	Reserved ... Library copy on loan to another reader	Requested copy on inter-library loan	Requested copy to be bought for ... Library	Used copy within or borrowed from another library (please specify which	Any other action taken (Please specify)
AUTHOR	TITLE OR JOURNAL REFERENCE															
6.																
7.																
8.																
9.																
10.																

OFFICE USE ONLY

SUBJ.	UNIT	CASE	ITEMS
1 2	3 4	5 6 7	8 9

BKS.	JNL.	OTH.	SEARCH
10 11	12 13	14 15	16 17

SUCC	OWN	CIRC.	OTH/LIB
18 19	20 21	22 23	24 25

A. USE OF SPECIFIC ITEMS

	AUTHOR	TITLE OR JOURNAL REFERENCE	No action taken (i.e. no real effort made to use item)	Used own copy/Bought a copy	Used copy belonging to a friend or another student	Used copy supplied by lecturer or available in Department/School	Checked ... Library but item not in catalogue or journal list	Item listed as being in ... Library but could not find when looked for it	Used copy borrowed from ... Library	Used library copy within ... Library (i.e. without borrowing)	Used ... Reserve collection copy	Used another item in ... Library which was a reasonable substitute	Reserved ... Library copy on loan to another reader	Requested copy on inter-library loan	Requested copy to be bought for ... Library	Used copy within or borrowed from another library (please specify which)	Any other action taken (Please specify)
11.																	
12.																	
13.																	
14																	
15.																	

207

206

208

B. USE OF OTHER LIBRARIES

PLEASE ANSWER QUESTION 1 IN RELATION TO ALL COURSES BEING STUDIED AT THIS COLLEGE. PLACE A TICK IN THE APPROPRIATE BOXES.

Q.1. During the last week, have you used material belonging to any library other than the ... college library, in connection with your studies ☐ YES ☐ NO

If your answer to question 1 was YES, please answer questions 2 and 3.

Q.2. Which library(s) did you obtain material from?

1. _____
2. _____
3. _____

Q.3. Did you obtain material from the library(s) referred to because:-

	Library 1	Library 2	Library 3
A. The ... Library did not contain the material sought (i.e. you checked it first)?	☐	☐	☐
B. The library used was more likely to contain the material sought (i.e. you did not check the ... Library first)?	☐	☐	☐
C. The library used was more convenient to use than the ... Library. (Please specify why).	☐ Because _____	☐ Because _____	☐ Because _____
D. Any other reason? (Please specify)	☐ Because _____	☐ Because _____	☐ Because _____

APPENDIX 7

STATISTICAL DATA SUBJECTED TO CORRELATION AND REGRESSION ANALYSES

Notes: (1) Analyses were carried out using the Statistical Package for the Social Sciences (S.P.S.S.) set of programs.

(2) No data was available for several colleges. For some other colleges no reliable data for circulation was available, so that even if data was available for other factors, it was not possible to include the college concerned in the analysis. In no way does the exclusion of data for a college indicate lack of co-operation or adequate statistical records on the part of the college concerned. Where 'N.A.' appears, the relevant statistic may not have been available, or was regarded by the investigators, for one reason or another, not to be sufficiently reliable for inclusion in the analyses.

(3) In arriving at the 'adjusted' annual general monograph circulation, the following procedures were applied, on the basis of circulation data provided by the colleges, and with regard to circulation studies reported in the literature:-

(a) Loans of serials, audio-visual items, inter-library loans, and reserve collection loans were excluded. Where the college included any such loans in its general loan statistics total, and was unable to give a separate figure, the following subtractions were made:-

For Audio-Visual Loans:	-10% in teachers colleges
	- 2% in other colleges
For Serial Loans:	- 4% in all colleges

(In all cases separate figures were available for reserve collection and inter-library loans.)

(b) Where no renewals of loans were permitted, or where renewals were not included in the loans total and no figure for total renewals was available, the following additions were made:-

For libraries with a 2 week loan period:	+15%
For libraries with a 1 week loan period:	+25%
For libraries with a loan period of less than one week:	+30%

(c) Where the library had no restriction on the number of items that may be borrowed by students at any one time, a further subtraction of 10% was made.

(d) The resulting figure was converted, so that all adjusted figures represented circulation on a 'standard' two-week loan period basis, by multiplying the total arrived at by the application of (a), (b) and (c) by:

For libraries with a 2 day loan period:	70%
For libraries with a 1 week loan period:	90%
For libraries with a 3 week loan period:	105%
For libraries with a term or semester loan period:	115%

GROUP 1 LIBRARIES (MULTIDISCIPLINE METROPOLITAN COLLEGES)

Name of College	College Population Served (Total)				College Population Served (F.T.E.)				Annual General Monograph Circulation			
	1971	1972	1973	1974	1971	1972	1973	1974	1971	1972	1973	1974
Canberra C.A.E.	2,160	2,358	3,267	4,028	1,499	1,674	2,351	2,831	19,858	34,997	43,234	59,936
Caulfield I.T.	4,085	4,203	4,764	4,910	2,745	3,028	3,363	3,471	36,453	41,936	51 418	93,769
Footscray I.T.	2,260	N.A.	1,744	1,987	1,225	N.A.	1,298	1,485	53,000	N.A.	52,240	54,128
New South Wales I.T.	N.A.	N.A.	N.A.	5,649	N.A.	N.A.	N.A.	3,385	N.A.	N.A.	N.A.	45,63
Prahran C.A.E.	N.A.	2,556	N.A.	2,387	N.A.	1,560	N.A.	1,501	N.A.	32,000	N.A.	32,180
Preston I.T.	1,696	1,289	1,582	1,467	1,737	969	1,239	1,184	17,179	16,341	19,800	24,489
Queensland I.T.	6,064	6,278	6,363	7,008	3,705	3,852	3,883	4,358	26,156	27,456	27,183	36,452
Royal Melbourne I.T.	18,228	16,359	19,306	21,520	10,999	10,105	11,807	13,270	89,000	94,596	110,998	157,070
South Australian I.T. (Adelaide)	6,579	6,383	5,671	5,745	4,101	4,083	3,728	3,825	57,713	59,497	58,551	62,946
Swinburne C.T.	5,921	5,931	6,712	6,966	3,945	4,053	4,462	4,600	64,265	84,885	96,163	112,457
Tasmanian C.A.E.	1,405	N.A.	2,012	2,557	1,155	N.A.	1,791	2,147	62,000	N.A.	71,551	85,894
Torrens C.A.E.	N.A.	N.A.	2,902	2,934	N.A.	N.A.	2,159	2,198	N.A.	N.A.	77,518	88,768
Western Australian I.T.	6,697	7,076	8,600	10,265	4,742	5,318	6,104	7,209	51,892	54,491	78,616	92,529

Name of College	Annual General Monograph Circulation (Adjusted)				Total Monograph Stock (Volumes)				Annual Acquisition (Monograph Volumes)				Seating Space in Library			
	1971	1972	1973	1974	1971	1972	1973	1974	1971	1972	1973	1974	1971	1972	1973	1974
Canberra C.A.E.	19,859	34,997	43,234	59,936	43,642	64,590	72,111	97,383	10,649	12,244	17,138	25,272	112	419	450	600
Caulfield I.T.	39,369	45,183	55,531	101,270	26,183	29,703	44,260	63,690	5,225	6,206	10,775	19,994	147	147	131	560
Footscray I.T.	55,120	N.A.	54,330	56,293	25,000	28,492	32,049	29,628	5,956	4,551	2,736	7,579	200	230	175	175
New South Wales I.T	N.A.	N.A.	N.A.	50,201	N.A.	N.A.	N.A.	77,500	N.A.	N.A.	N.A.	18,399	N.A.	N.A.	N.A.	160
Prahran C.A.E.	N.A.	30,000	N.A.	30,249	7,800	10,500	14,698	21,498	2,010	3,089	4,198	6,800	70	78	120	130
Preston I.T.	18,209	17,321	20,988	25,958	12,375	13,091	16,636	23,773	2,145	1,242	2,857	4,066	68	190	190	190
Queensland I.T.	25,632	26,907	26,639	35,723	26,558	29,470	37,259	46,649	5,677	4,547	5,624	9,390	84	227	172	176
Royal Melbourne I.T.	102,350	108,785	127,648	180,630	65,650	77,654	89,147	99,004	11,438	13,293	18,092	15,149	650	650	760	760
South Australian I.T. (Adelaide)	66,370	68,422	67,334	72,388	42,850	49,000	55,850	64,200	8,550	7,450	9,750	9,750	220	370	452	456
Swinburne C.T.	73,905	97,618	110,587	129,325	42,845	46,254	55,000	70,454	9,684	10,252	11,160	15,888	660	660	660	660
Tasmanian C.A.E.	68,200	N.A.	78,706	94,483	33,604	51,430	74,253	110,466	10,200	11,600	20,579	26,213	48	448	331	331
Torrens C.A.E.	N.A.	N.A.	80,619	92,319	N.A.	N.A.	48,610	57,213	N.A.	N.A.	8,521	14,363	N.A.	N.A.	249	249
Western Australian I.T.	51,892	54,491	78,616	99,577	56,500	67,427	83,904	98,545	6,021	13,618	16,547	27,820	720	791	963	1,133

GROUP 2 LIBRARIES (COUNTRY MULTIDISCIPLINE COLLEGES)

Name of College	College Population Served (Total)				College Population Served (F.T.E.)				Annual General Monograph Circulation			
	1971	1972	1973	1974	1971	1972	1973	1974	1971	1972	1973	1974
Ballarat I.A.E.	1,461	1,678	1,649	2,114	962	1,117	1,141	1,484	37,970	41,846	39,740	35,268
Bendigo I.T.	2,153	2,532	2,495	2,514	1,395	1,591	1,547	1,630	17,435	19,334	23,518	24,664
Capricornia I.A.E.	867	N.A.	848	1,379	542	N.A.	713	1,117	8,350	N.A.	43,968	52,800
Darling Downs I.A.E.	738	1,907	1,336	1,868	549	1,401	1,113	1,546	12,432	14,016	18,495	34,401
Gippsland I.A.E.	N.A.	N.A.	669	1,007	N.A.	N.A.	402	722	N.A.	N.A.	12,385	19,773
Gordon I.T.	3,700	4,003	3,833	1,765	2,377	2,574	2,427	1,454	34,362	49,062	57,605	48,119
Mitchell C.A.E.	1,023	1,530	1,747	2,290	668	1,239	1,379	1,784	16,053	25,529	27,712	56,461
Riverina C.A.E.	N.A.	N.A.	936	1,750	N.A.	N.A.	870	1,303	N.A.	N.A.	38,101	45,698
South Australian I.T. (Whyalla)	375	410	385	365	201	228	214	203	3,709	5,650	5,110	8,110
Warrnambool I.A.E.	456	451	563	746	359	337	445	545	N.A.	N.A.	20,600	24,300

Name of College	Annual General Monograph Circulation (Adjusted)				Total Monograph Stock (Volumes)				Annual Acquisition (Monograph Volumes)				Seating Space in Library			
	1971	1972	1973	1974	1971	1972	1973	1974	1971	1972	1973	1974	1971	1972	1973	1974
Ballarat I.A.E.	30,417	37,661	35,766	31,741	22,702	26,648	30,509	35,680	3,558	3,957	3,861	6,028	117	117	295	295
Bendigo I.T.	17,435	19,334	23,518	24,664	25,408	30,715	34,994	39,600	2,358	3,360	4,279	5,935	116	116	116	266
Capricornia I.A.E.	7,849	N.A.	41,330	49,632	18,000	N.A.	23,600	23,080	3,530	N.A.	5,260	4,750	70	N.A.	145	133
Darling Downs I.A.E.	11,686	13,175	17,385	32,337	17,618	20,545	28,558	46,578	4,187	2,297	6,709	18,020	72	239	239	239
Gippsland I.A.E.	N.A.	N.A.	12,137	19,378	N.A.	N.A.	13,000	17,915	N.A.	N.A.	3,150	5,422	N.A.	N.A.	129	125
Gordon I.T.	37,455	53,478	62,789	52,450	32,000	40,220	49,680	50,860	8,200	10,350	9,460	6,970	285	285	285	285
Mitchell C.A.E.	14,127	22,465	24,387	44,040	33,929	39,839	43,603	56,391	2,401	5,960	4,571	13,536	178	165	208	208
Riverina C.A.E.	N.A.	N.A.	35,815	42,956	N.A.	N.A.	46,742	58,310	N.A.	N.A.	10,000	12,556	N.A.	N.A.	160	160
South Australian I.T. (Whyalla)	3,709	5,650	5,110	8,110	5,503	6,200	7,235	9,400	742	768	1,042	2,050	30	34	34	34
Warrnambool I.A.E.	N.A.	N.A.	18,540	21,870	N.A.	9,600	12,000	21,000	N.A.	2,000	4,000	8,500	66	60	120	120

GROUP 3 LIBRARIES (METROPOLITAN TEACHERS AND MONOVOCATIONAL COLLEGES)

Name of College	College Population Served (Total)		College Population Served (F.T.E.)		Annual General Monograph Circulation		Annual General Monograph Circulation (Adjusted)		Total Monograph Stock (Volumes)		Annual Acquisition (Monograph Volumes)		Seating Space in Library	
	1973	1974	1973	1974	1973	1974	1973	1974	1973	1974	1973	1974	1973	1974
Adelaide C.A.E.	1,668	2,034	1,150	1,429	49,915	60,832	44,564	54,749	46,940	59,013	5,579	12,053	170	150
Alexander Mackie C.A.E.	861	900	752	750	29,394	29,340	22,339	22,298	39,425	42,774	3,249	3,416	63	63
Brisbane Kindergarten T.C.	410	527	397	504	48,400	52,500	41,850	44,820	11,200	19,400	3,000	8,200	80	76
Churchlands T.C.	459	1,127	459	1,123	11,881	35,693	11,466	34,265	11,288	19,238	5,508	8,702	330	330
Claremont T.C.	636	685	636	682	12,779	17,581	14,696	20,218	25,867	29,054	2,099	3,678	95	101
Graylands T.C.	520	534	520	534	13,943	12,145	16,871	14,695	21,246	23,993	1,636	3,680	104	104
Kelvin Grove C.A.E.	1,701	1,782	1,701	1,724	71,594	85,663	54,411	65,103	43,084	55,093	6,141	12,560	177	217
Lincoln Institute	472	588	468	561	38,628	35,820	29,357	27,223	10,662	12,240	1,725	1,786	102	102
Melbourne State College	3,314	3,883	3,168	3,683	87,603	103,603	78,842	93,243	78,600	90,500	8,500	12,450	400	350
Mt. Gravatt C.A.E.	1,272	1,474	1,221	1,389	34,761	51,118	34,761	51,118	26,167	40,233	7,591	14,167	224	238
Mt. Lawley T.C.	814	925	813	923	N.A.	28,905	N.A.	27,749	N.A.	24,515	N.A.	9,377	N.A.	272
Murray Park C.A.E.	1,204	1,508	1,125	1,252	62,222	73,271	65,333	76,935	44,497	50,964	4,353	6,902		
Nepean C.A.E.	392	395	392	395	18,837	17,502	16,200	15,052	29,000	31,466	1,808	2,935	72	65
N. Brisbane C.A.E.	978	941	978	941	57,685	36,677	43,840	38,510	26,946	31,068	3,336	4,572	135	151
Salisbury C.A.E.	1,114	1,290	1,075	1,226	45,000	54,700	51,750	62,905	23,253	29,934	3,687	6,956	136	120
S.C.V. Burwood	1,160	1,371	1,157	1,350	61,963	88,030	59,484	84,509	42,612	46,647	4,125	5,717	185	190
S.C.V. Coburg	496	550	995	989	N.A.	46,699	N.A.	37,359	32,698	36,777	N.A.	4,079	180	180
S.C.V. Frankston	801	933	796	922	59,073	64,800	47,258	51,840	26,800	33,000	3,160	6,500	195	290
S.C.V. Rusden	1,301	2,037	1,231	1,887	37,000	65,570	33,300	59,013	38,256	47,520	10,149	10,638	364	366
S.C.V. Toorak	959	1,006	949	999	48,660	59,200	43,794	53,280	33,486	37,121	4,200	6,734	74	56
Sturt C.A.E.	839	1,083	808	958	33,345	33,403	28,677	28,727	40,436	45,000	7,853	8,947	275	275
Sydney Kindergarten T.C.	370	416	352	381	17,200	23,700	18,060	24,885	21,264	30,250	2,225	8,986	82	82
Sydney T.C.	2,096	2,004	2,077	1,998	74,423	59,724	59,538	47,779	129,835	133,722	4,749	5,662	210	186
Victoria College of the Arts	N.A.	162	N.A.	141	N.A.	1,952	N.A.	2,342	N.A.	4,070	N.A.	1,598	N.A.	35
Western Australian S.T.C.	1,813	2,089	1,021	1,280	27,740	35,731	26,630	34,304	29,125	33,544	2,666	4,419	168	168

GROUP 4 LIBRARIES (COUNTRY TEACHERS AND MONOVOCATIONAL COLLEGES)

Name of College	College Population Served (Total)		College Population Served (F.T.E.)		Annual General Monograph Circulation		Annual General Monograph Circulation (Adjusted)		Total Monograph Stock (Volumes)		Annual Acquisition (Monograph Volumes)		Seating Space in Library	
	1973	1974	1973	1974	1973	1974	1973	1974	1973	1974	1973	1974	1973	1974
Armidale C.A.E.	1,174	1,228	981	1,043	30,315	26,756	37,893	36,120	57,597	N.A.	1,509	N.A.	132	132
Newcastle C.A.E.	2,189	2,442	2,005	2,204	91,625	92,097	101,703	102,228	43,811	51,430	4,816	8,104	104	237
Northern Rivers C.A.E.	336	419	336	410	13,600	26,051	13,056	22,404	16,837	20,290	4,225	3,475	54	59
Queensland A.C.	539	611	534	609	17,358	13,088	17,358	13,088	14,633	18,062	1,900	2,700	65	148
Roseworthy A.C.	185	188	185	188	2,516	2,732	2,893	3,142	3,413	4,373	411	960	39	39
S.C.V. Ballarat	652	696	652	696	25,000	26,000	19,800	21,510	29,305	33,016	2,810	4,920	40	85
S.C.V. Bendigo	N.A.	881	N.A.	806	N.A.	32,630	N.A.	28,017	N.A.	21,760	3,559	4,858	62	76
S.C.V. Geelong	702	706	702	706	3,000	5,000	2,100	3,500	26,757	30,227	2,800	3,470	88	94
Townsville T.C.	550	508	548	502	28,513	32,142	28,513	32,142	17,089	20,562	5,105	4,434	73	164
Wollongong I.E.	1,073	1,093	933	927	38,059	32,073	34,253	28,866	36,874	39,133	1,917	2,318	178	178

APPENDIX 8

DEFINITIONS RELATING TO LIBRARY COLLECTIONS USED BY THE COMMISSION ON ADVANCED EDUCATION, 1975

New Title. A new title is the first copy of that title in that edition held by the library whether held in book, periodical or microform. A new periodical title is the first issue of a periodical which is catalogued. Where two or more copies of the same new book or periodical are received, this should be counted as one new title only. Change of title of a periodical does not affect the number of titles except that if a periodical title commences to appear in more than one series with distinct designations (e.g. Part A, Part B) each series other than the first should be treated as a new title. Purchase of discontinued periodicals in bound forms should not be shown as new titles and are to be treated as additions to holdings of periodical volumes. A new microform title should only be counted if the title is not already held in a book or periodical form.

Volumes. A volume is a physical unit of any printed, type-written, hand-written, mimeographed or processed work contained in one binding or portfolio, hardbound, or paperbound, which has been catalogued. This includes periodicals bound or waiting to be bound. The classification is as follows:

Book — This term is used for any publication which is not a periodical or microform or included under Other below.

Periodical — This is any publication which is issued in a continuous series under the one title and published at regular or irregular intervals over an indefinite period, individual issues in the series being numbered consecutively or each issue being dated. Each issue normally includes the work of a number of authors. Newspapers are included here. Publications appearing annually or less frequently are also classified as periodicals.

Microform — All microform material should be counted separately and excluded from counts of books and periodicals. Where possible, microforms should be expressed as equivalent numbers of volumes, i.e. how the contents of the microforms would be counted if they were in book form. Any departure from this rule and the units of measurement used should be noted on the form.

Other — Includes magnetic tapes and motion film which should be counted in reels. Each phonogram record should be counted as a separate unit; pictorial material, maps, manuscripts, scores and sheet music etc. in appropriate physical units.

Holdings. Holdings at beginning and end of year include books on loan which are expected to be returned. If exact figures are not available, make careful estimates. Where estimates only are available show the number of volumes or physical units which belong to the library and which it has a record.

Additions. Include all additions received by purchase, donation or exchange during that year. Only catalogued material should be counted as an addition.

Withdrawals. Items no longer held and holdings written off the library records due to loss etc. It should equal the sum of holdings at the beginning of the year and additions, less holdings at the end of the year.

Inter-Library Loans. Loans of catalogued items, including photocopies, made to any library and to any other institution outside the college campus. Renewals should be excluded.

Other Loans. Loans of catalogued items made to students and staff and other persons for use outside the library. Renewals should be excluded.

Inter-library Borrowings. Catalogued items (including photocopies) by either central or branch libraries from any library or any other institution outside the college of advanced education campus.

APPENDIX 9

C.A.E. LIBRARIES REQUIRING A 10% 'ISOLATION ALLOWANCE'

IN COLLECTION PROVISION, AS AT 1st JANUARY 1977

1. New South Wales

Goulburn College of Advanced Education
Hawkesbury Agricultural College
Mitchell College of Advanced Education
Northern Rivers College of Advanced Education
Riverina College of Advanced Education

2. Victoria

Ballarat College of Advanced Education
Bendigo College of Advanced Education
Gippsland Institute of Advanced Education
State College of Victoria - Frankston
Warrnambool Institute of Advanced Education

3. Queensland

Capricornia Institute of Advanced Education
Darling Downs Institute of Advanced Education
Queensland Agricultural College

4. South Australia

Roseworthy Agricultural College
South Australian Institute of Technology (Whyalla Campus Only)

5. Western Australia

Western Australian Institute of Technology
(Kalgoorlie and Muresk Campuses Only)

6. Tasmania

Tasmanian College of Advanced Education (Newnham Campus Only)

APPENDIX 10

SOME GENERAL CURRENT BIBLIOGRAPHICAL AIDS OF ASSISTANCE FOR SELECTION AND ACQUISITION IN C.A.E. LIBRARIES

We consider that all the works listed should be held by libraries of larger multidisciplinary colleges, if staff of those libraries are to take an active and effective role in coordinating the selection of materials. Those marked with an asterisk* may not be suitable for some monovocational colleges. The NICEM publications are particularly expensive and may be beyond the means of smaller college libraries. The works listed are all current on-going publications, or have been so recently published that they will remain useful in 1976-77. The extent of useful information in each work varies considerably, but all offer enough information to be of at least some assistance in the selection process. All works are general, and we should expect all C.A.E. libraries to contain many other serials in appropriate subject fields, which contain review information valuable to staff teaching in those fields, and which might well be circulated to teaching staff in promoting an active interest in the selection of materials for the library.

1. Australian Audio Visual Reference Book. Melbourne, D. W. Thorpe, Irregular.
2. Australian Bookseller and Publisher. Melbourne, D. W. Thorpe, Monthly except January.
3. Australian Books in Print. Melbourne, D. W. Thorpe, Annual with 3 supplements per year.
4. Australian Films. Canberra, National Library of Australia, Annual.
5. Australian Government Publications. Canberra, National Library of Australia, Quarterly.
6. Australian Maps* Canberra, National Library of Australia, Quarterly.
7. Australian National Bibliography. Canberra, National Library of Australia, 4 issues per month.
8. Book Review Digest. Bronx, N. Y., H. W. Wilson, Monthly except February and July.
9. Book Review Index. Detroit, Gale, Bimonthly.
10. Books for College Libraries. Chicago, American Library Association, 2nd edition 1975. 6 vols.

11. Books in Print. New York, R. R. Bowker, Annual.

12. Bookseller. London, J. Whitaker, Weekly.

13. British Book News. London, British Council, Monthly.

14. British Books in Print. London, J. Whitaker, Annual.

15. British National Bibliography. London, British Library Bibliographic Services Division, Weekly.

16. British Universities Film Council. Audio-Visual Materials for Higher Education. London, B.U.F.C., Biennial.

17. Choice (A.C.R.L.). Middletown, Conn., Association of College and Research Libraries, Monthly.

18. Cumulative Book Index. Bronx, N. Y., H. W. Wilson, Monthly except August.

19. Current Australian Serials. Canberra, National Library of Australia, 9th edition 1975.

20. Guide to Microforms in Print. Englewood, Colo., Information Handling Services, Annual.

21. Guide to Reprints. Englewood, Colo., Information Handling Services, Annual.

22. Higher Education Learning Programmes Information Service - HELPIS. London, Council for Educational Technology, 3rd edition 1973.

23. Index to Australian Book Reviews. Adelaide, Libraries Board of South Australia, Quarterly.

24. International Index to Multi-Media Information. Pasadena, Calif., Audio-Visual Associates, Quarterly.

25. Irregular Serials and Annuals: an International Directory. New York, R. R. Bowker, Biennial, with supplement in intervening years.

26. Katz, Bill, ed. Magazines for Libraries. New York, R. R. Bowker, 2nd edition 1972, plus supplement 1974.

27. Library Journal. New York, R. R. Bowker, 2 issues per month, 1 issue in July and August.

28. Media Review Digest. Ann Arbor, Pierian Press, Annual with 3 supplements per year.

29. Monthly List of Publications Placed on Sale. Canberra, Australian Government Publishing Service, Monthly.

30. National Library of Australia. New Films in the Lending Collection, Canberra, National Library of Australia, Quarterly.

31. NICEM Update of Nonbook Media. Los Angeles, National Information Center for Educational Media, Monthly, cumulating biennially into complete new editions for each medium.

32. Previews: Non-Print Software and Hardware News and Reviews. New York, R. R. Bowker, Monthly, except June-August.

33. Publishers Weekly. New York, R. R. Bowker, Weekly.

34. Reference Services Review. Ann Arbor, Pierian Press, Quarterly.

35. Serials Review. Ann Arbor, Pierian Press, Quarterly.

36. Subject Guide to Books in Print. New York, R. R. Bowker, Annual.

37. Ulrich's International Periodicals Directory. New York, R. R. Bowker, Biennial plus supplement in intervening years.

38. Woodworth, David P., ed. Guide to Current British Journals. London, Library Association, 2nd edition 1973. 2 vols.

APPENDIX 11

PERIODICAL TITLES MOST HIGHLY RECOMMENDED BY C.A.E. LECTURERS FOR TEACHING/LEARNING PURPOSES IN TWELVE COURSE AREAS

The periodical titles below represent about 20 titles in each course area that were most often recommended for use in connection with undergraduate teaching in the course areas involved, by lecturers through Australia.

No suggestion is made that each list is the best choice for any particular college, as there are variations in emphasis in courses from college to college. Similarly, some titles not listed may be ranked more highly in particular colleges, for the same reason. Nevertheless, all the titles listed were so strongly recommended in total, that we consider that the libraries of all C.A.E.'s offering undergraduate programmes in the course areas listed should have current subscriptions to the titles listed. The titles listed are periodicals, in the limited sense in which we have defined the term in our main report, i.e. all annuals are excluded. No bibliographical periodicals have been included.

The titles in each course are listed in rank order, i.e. with the most strongly recommended title first.

1. ACCOUNTING

Australian Accountant
Chartered Accountant in Australia
Accounting Review
Abacus
Journal of Accountancy
Accountants Journal (N.Z.)
Rydge's
Accountancy
The Accountant (U.K.)
Chartered Secretary (Aust.)
Management Accounting (U.S.)
Australian Financial Review
Financial Executive
Canadian Chartered Accountant (CA Magazine)
Harvard Business Review

Journal of Accounting Research

Accountants Magazine

Accounting and Business Research

Accounting Education (AAANZ)

Journal of Finance

Management Accounting (U.K.)

2. ARCHITECTURE

Architecture in Australia

Architects Journal

Architectural Design

Architectural Review

R.I.B.A. Journal

Progressive Architecture

Domus

Notes on the Science of Building

Building Economist

Architectural Association Quarterly

Architectural Record

Journal of the American Institute of Planners

Architectural Forum

Architecture d'Aujourd'hui

Building Materials

Ekistics

Journal of Architectural Research

Built Evnironment Quarterly

3. CHEMISTRY

Journal of Chemical Education

Chemistry in Britian

Analytical Chemistry

Education in Chemistry

Journal of the American Chemical Society

Nature

Scientific American

Journal of the Chemical Society. Dalton Transactions

New Scientist

Proceedings of the Royal Australian Chemical Institute

Analyst
Australian Journal of Chemistry
Chemical Reviews
Journal of the Chemical Society. Faraday Transactions (2 parts)
Chemical and Engineering News
Chemistry and Industry
Journal of Physical Chemistry
Chemical Technology
Chemistry
Inorganic Chemistry
Journal of the Chemical Society. Chemical Communications
Journal of Organic Chemistry
Journal of the Chemical Society. Perkin Transactions (2 parts)

4. CIVIL ENGINEERING

Civil Engineering Transactions, Institution of Engineers, Australia
Civil Engineering (A.S.C.E.)
Journal of the Institution of Engineers, Australia
Proceedings of the A.S.C.E. (Journals of all Divisions)
Institution of Civil Engineers. Proceedings
Journal of the American Concrete Institute
Civil Engineering (U.K.)
Structural Engineer
Geotechnique
New Civil Engineer
Engineering Issues
Constructional Review
Engineering Education
Steel Construction
Australian Surveyor
Concrete
Engineering News-Record
Journal of the Prestressed Concrete Institute

5. ELECTRICAL AND ELECTRONIC ENGINEERING

I.E.E.E. Spectrum
Electronics and Power
Proceedings of the Institution of Electrical Engineers
I.E.E.E. Transactions (All parts)

Proceedings of the I.E.E.E.

Electronics

Proceedings of the I.R.E.E.

Electronic Engineering

Wireless World

Australian Electronics Engineering

Electrical Engineering Transactions, Institution of Engineers, Australia

Siemens Review

Electronics Australia

Electronic Design

Brown Boveri Review

Journal of the Institution of Engineers, Australia

A.S.E.A. Journal

Electronics Today International

Hewlett-Packard Journal

Bell System Technical Journal

Electrical Review (U.K.)

6. MANAGEMENT

Harvard Business Review

Administrative Science Quarterly

Fortune

Public Administration (Aust.)

Australian Accountant

Rydge's

Journal of Marketing

Management Today

Public Administration (U.K.)

Journal of Applied Psychology

Personnel Psychology

Work and People

Academy of Management Journal

Human Relations

Management Science (2 parts)

Journal of Industrial Relations

Personnel Management (Aust.)

Public Administration Review

Australian Law Journal

California Management Review

7. MECHANICAL ENGINEERING

Chartered Mechanical Engineer (CME)

Machine Design

Journal of the Institution of Engineers, Australia

Engineering

International Journal of Mechanical Engineering Education

Engineering Education

Engineering Materials and Design

Mechanical and Chemical Engineering Tranactions of the Institute of Engineers, Australia

Engineer

Journal of Fluids Engineering (Transactions of the ASME. Series I)

Journal of Applied Mechanics (Transactions of the ASME. Series E)

Journal of Heat Transfer (Transactions of the ASME. Series C)

Mechanical Engineering

Production Engineer

Scientific American

Journal of Engineering for Industry (Transactions of the ASME. Series B)

Journal of Engineering for Power (Transactions of the ASME. Series A)

Journal of Engineering Materials and Technology (Transactions of the ASME. Series H)

Proceedings. Institution of Mechanical Engineers (London)

Product Engineering

8. MEDICAL TECHNOLOGY

Nature

Journal of Chemical Pathology

New Scientist

British Medical Journal

Lancet

American Journal of Clinical Pathology

Science

Scientific American

Australian Journal of Medical Technology

Medical Journal of Australia

American Journal of Medical Technology

Journal of Laboratory and Clinical Medicine

Medical Laboratory Technology

Bacteriological Reviews

Applied Microbiology

Blood: The Journal of Hematology

British Journal of Haematology

Clinica Chimica Acta

Clinical Chemistry

9. PHARMACY

Journal of Pharmaceutical Sciences

Journal of Pharmacy and Pharmacology

Australian Journal of Pharmacy

Pharmaceutical Journal

British Medical Journal

American Journal of Pharmaceutical Education

Nature

American Journal of Hospital Pharmacy

Lancet

Medical Journal of Australia

Australian Journal of Pharmaceutical Sciences

Drug Intelligence and Clinical Pharmacy

Journal of Chemical Education

Canadian Journal of Pharmaceutical Sciences

Manufacturing Chemist and Aerosol News

Analytical Chemistry

Clinical Pharmacology and Therapeutics

Journal of Pharmacology and Experimental Therapeutics

10. PHYSICS

Scientific American

Physics Today

American Journal of Physics

Physics Education

New Scientist

Nature

Physics Teacher

Australian Physicist

Journal of Physics E: Scientific Instruments

Physics Bulletin

Contemporary Physics

Science

Applied Optics

Journal of Applied Physics

Search (ANZAAS)

Physical Review (Parts A and B)

Review of Scientific Instruments

Electronics Australia

Journal of Physics D: Applied Physics

11. 'SOCIAL SCIENCES' (Economics/Politics/Sociology only)

Economic Record

Australian Economic Review

Australian Quarterly

Australian and New Zealand Journal of Sociology

American Journal of Sociology (AJS)

American Sociological Review

American Economic Review

Australian Economic Papers

Economic Journal

British Journal of Sociology

Politics

Australian Journal of Politics and History

Australian Outlook

Arena (Aust.)

Current Affairs Bulletin

Historical Studies

Journal of Political Economy

Dissent (Australia)

Economist

Journal of Industrial Relations

Quadrant (Aust.)

Meanjin Quarterly

Asian Survey

Labour History

Quarterly Journal of Economics

Finance and Development

Journal of Social Issues

New Society

Economic Papers (N.S.W.)

Social Forces

Social Problems

Sociological Review

Sociology

12. THERAPY (Occupational and Physical)

Physiotherapy

Physical Therapy

American Journal of Occupational Therapy

Australian Occupational Therapy Journal

Australian Journal of Physiotherapy

Medical Journal of Australia

Lancet

Archives of Physical Medicine and Rehabilitation

Physiotherapy Canada

British Journal of Occupational Therapy

Scientific American

Geriatrics

Canadian Journal of Occupational Therapy

Journal of Bone and Joint Surgery

American Journal of Physical Medicine

Brain

British Medical Journal

Developmental Medicine and Child Neurology

New Zealand Journal of Physiotherapy

Rehabilitation (U.K.)

Journal of Rehabilitation

Rehabilitation in Australia